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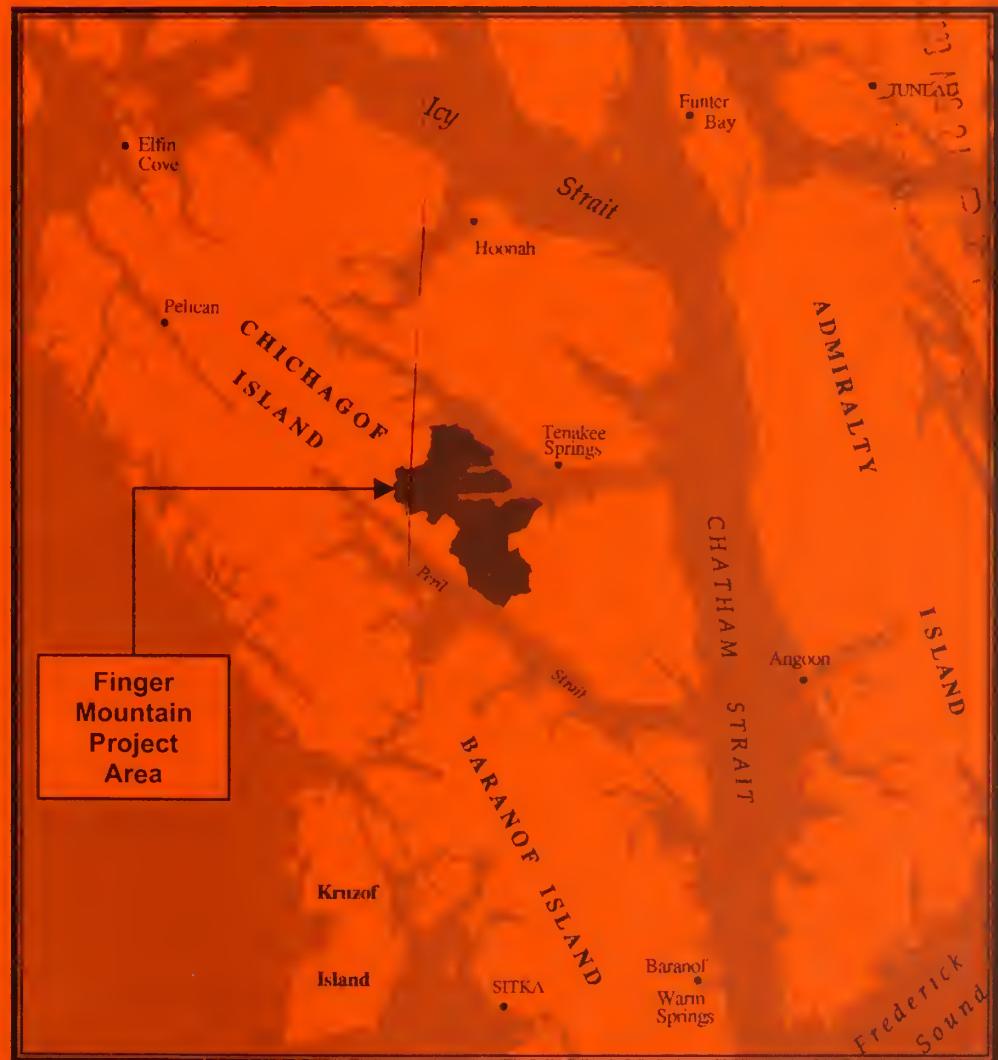
June 2003



# Finger Mountain Timber Sale(s)

## Record of Decision and Final Environmental Impact Statement

### Volume I



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File Code: 1950  
Date: June 20, 2003

Dear Reader,

Enclosed is your copy of the Record of Decision (ROD) and Final Environmental Impact Statement (FEIS) for the Finger Mountain Timber Sale(s) Project, Sitka Ranger District, Tongass National Forest.

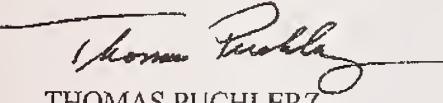
The FEIS describes four “action” alternatives for harvesting timber and one No-Action alternative. The action alternatives propose different combinations of resource outputs and spatial locations of harvest units, and they would make between 4 and 21 million board feet (MMBF) of timber available for harvest within the project area. The FEIS also includes disclosure of the effects likely to result from implementation of the alternatives.

The ROD explains my decision, which is based on the information in the FEIS, regarding the Finger Mountain Timber Sale(s) Project. The effective date of implementation for the decision and the Notice of Rights to Appeal are specified in the ROD.

Copies of the FEIS are available in all Forest Service offices (including District and Supervisor's Offices) on the Tongass National Forest. Additional copies may be obtained from the Sitka Ranger District Office, 204 Siginaka Way, Sitka, Alaska 99835, or by requesting one from Rick Abt at (907) 747-4226.

I want to thank those of you who took the time to review and submit comments on the Draft Environmental Impact Statement. I appreciate your interest in the management of the Tongass National Forest.

Sincerely,

  
THOMAS PUCHLERZ  
Forest Supervisor





# Finger Mountain Timber Sale(s)

## Final Environmental Impact Statement

**United States Department of Agriculture  
Tongass National Forest  
Ketchikan, Alaska**

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## Abstract

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The USDA Forest Service proposes to harvest approximately 21 million board feet (MMBF) of timber in the Finger Mountain Project Area, Sitka Ranger District, Tongass National Forest. Timber volume would be sold from this project in multiple sales of varying sizes. The actions analyzed in this Final Environmental Impact Statement (FEIS) are designed to implement direction contained in the 1997 Tongass National Forest Land and Resource Management Plan. This FEIS describes four “action” alternatives, which provide different combinations of resource outputs and spatial locations of harvest units. The action alternatives would make between 4 and 21 MMBF of timber available for harvest within the project area. The significant issues addressed by the alternatives and the FEIS include: 1) old-growth habitat and associated wildlife; 2) subsistence opportunities; 3) scenic resources and recreation experiences; 4) log transfer facilities, camps, and the marine environment; and 5) economic opportunities for small-scale timber operators.

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# **Record of Decision (ROD)**

## **Finger Mountain Timber Sale(s)**



# Record of Decision

## Finger Mountain Timber Sale(s)

**USDA Forest Service  
Tongass National Forest  
Sitka Ranger District**

### Introduction

This Record of Decision (ROD) documents my selection of the alternative that will make timber available from the Finger Mountain Project Area. The Finger Mountain Project Area is located in the Tongass National Forest, situated on the southern shore of Tenakee Inlet on Chichagof Island (see Figure 1-1 in the Final EIS). The project area includes the major watersheds of Inbetween Creek, Saltery Bay, Crab Bay, South Crab Bay, Fog Creek, Broad Creek, and Broad Finger Creek. The City of Tenakee Springs lies north of the project area across Tenakee Inlet.

### Background

The purpose and need for this project is to implement direction of the Forest Plan:

- manage the timber resource for production of saw timber and other wood products from suitable timber lands made available for timber harvest on an even-flow, long-term, sustained basis and in an economically efficient manner,
- seek to provide a timber supply sufficient to meet the annual market demand for Tongass National Forest timber and the market demand for the planning cycle,
- provide a diverse range of opportunities for resource uses that contributes to the local and regional economies of Southeast Alaska, and
- support a wide range of natural resource employment opportunities within Southeast Alaska's communities.

### Decision

This decision is based upon the analysis and evaluations in the Finger Mountain Timber Sale(s) Final Environmental Impact Statement (EIS). My decision includes the following:

- the estimated acreage to be treated in this project area in multiple timber sales,
- the location of timber harvest units, road systems, and log transfer facilities (LTs),
- access management measures (road, trail, and area restrictions and closures),
- mitigation measures and monitoring requirements for sound resource management,
- whether there may be a significant restriction on subsistence uses, and
- whether it is necessary to adjust the location and/or size of small old-growth reserves (OGR) within the project area and, if so, how they should be adjusted (see Appendix 1 of this ROD).

# Record of Decision

It is my decision to select Alternative B (hereafter referred to as the Selected Alternative), as described below, for implementation in the Finger Mountain Project Area. This decision meets the purpose and need for the project, is consistent with the 1997 Tongass Land and Resource Management Plan (1997 Forest Plan), and is responsive to the issues raised during scoping and in comments to the Draft EIS.

I am also choosing to modify two small Old-growth Reserves based upon analysis completed within this EIS and within Appendix 1 of this Record of Decision. For further information on this decision, refer to Appendix 1 of this Record of Decision and the Biodiversity and Old-growth section of Chapter 3 in this EIS.

The Selected Alternative for the Finger Mountain Timber Sale(s) Project is described in this section of the ROD and is displayed in the accompanying ROD map. Specifically, my decision authorizes the following:

1. The Selected Alternative rebuilds needed infrastructure and provides opportunities for small sales. Timber will be harvested in this entry on approximately 936 acres of National Forest land allocated to timber production. This specified timber harvest will result in approximately 21.4 million board feet (MMBF) of sawlog timber. The activities proposed for the Finger Mountain Project, including construction of roads, are appropriate for the land use designations of the project area.

I expect implementation to occur in one or two independent timber sales in addition to some small sale opportunities. A final decision on the number of sales will be made later during final timber sale preparation. There will be 36 timber harvest units located in the project area. I intend for Units 1552, 1811, and 1850 to be offered for small sales, depending on market demand. These units would yield approximately 2,048 MBF (thousand board feet) of timber from 76 acres for small sales. The Selected Alternative includes a mixture of harvest methods to achieve vegetation and other resource objectives. Table ROD-1 displays a summary of the specifications and expected outputs for the Selected Alternative. Exhibit A of this ROD lists each unit approved for harvest under the Selected Alternative along with its yarding system, harvest method, and management system. Timber harvest units are described on unit cards in Appendix B in the Final EIS. Silvicultural diagnosis and prescriptions for each harvest unit are located in the Planning Record for the Finger Mountain Timber Sale(s) Project EIS.

2. Road construction will include 9.8 miles of new system road, reconstruction of 13.8 miles of existing road, and construction of 10.9 miles of temporary road in order to access the selected timber harvest units. Exhibit B of this ROD lists Selected Alternative roads and their respective road management objectives (RMOs) for future management of the transportation system. Roads that will remain open will be maintained at Maintenance Level 2 for administrative purposes and incidental public use. A Roads Analysis Process was conducted for the South Chichagof Island Roads Analysis Area during the winter of 2001/2002 (see the Summary in Exhibit C).
3. A temporary drive-down ramp LTF will be constructed at the approved Inbetween Creek site in Tenakee Inlet. This LTF will be removed upon completion of the sale. A bulkhead for barge use will be reconstructed on the existing site at the mouth of Crab Bay, as will a small drive-down ramp intended to facilitate small sales. Restrictions on the timing of reconstruction and use of this facility will eliminate adverse impacts to herring spawn in Tenakee Inlet. One logging camp, a floating barge located at Crab Bay, will be used for this project.
4. This ROD identifies mitigation measures intended to reduce or eliminate adverse environmental effects of timber harvest and road construction activities specified in the Selected Alternative. It also specifies the implementation and effectiveness monitoring

planned to determine how well resource management objectives have been met. In addition, the ROD identifies feasible enhancement opportunities following implementation of this alternative. These opportunities will be included in Sale Area Improvement Plan(s) developed for each timber sale. Mitigation measures, monitoring activities, and enhancement opportunities are described on unit cards. A listing of site-specific mitigation measures applicable to each unit and road is found in Appendix E of the Final EIS.

5. To proceed with the timber harvest as specified in the Selected Alternative, various permits and licenses must be obtained from other agencies. Administrative actions on these permits may now take place. The agencies and their permit responsibilities are listed below.

#### **U.S. Army Corps of Engineers**

- Approval of discharge of dredged or fill material into waters of the United States (Section 404 of the Clean Water Act of 1977, as amended)
- Approval of construction of structures or work in navigable waters of the United States (Section 10 of the Rivers and Harbors Act of 1899)

#### **U.S. Environmental Protection Agency**

- National Pollutant Discharge Elimination Systems Review (Section 402 of the Clean Water Act)

#### **State of Alaska, Department of Natural Resources**

- Authorization for occupancy and use of tidelands and submerged lands
- Authorization for occupancy and use of State-owned uplands

#### **State of Alaska, Department of Environmental Conservation**

- Solid Waste Disposal Permit (Section 402 of the Clean Water Act)
- Certificate of Reasonable Assurance (Section 401 of the Clean Water Act), which certifies compliance with Alaska Water Quality Standards (Section 401 Certification)

6. Finally, I have determined that there is no significant possibility of a significant restriction on subsistence use of Sitka black-tailed deer or any other subsistence use in the project area. Therefore, no restrictions on subsistence activities are necessary as a result of this project.

# Record of Decision

**Table ROD - 1**  
**Summary of Selected Alternative**

	<b>Alternative B</b>
<b>Acres Feasible for Harvest<sup>1</sup></b>	4,604
<b>Proposed Treated Acres<sup>2</sup></b>	1,027
<b>Proposed Harvest Acres<sup>3</sup></b>	936
<b>% of Feasible Acres Harvested</b>	20.3%
<b>% of Total Productive Forest Acres Harvested<sup>4</sup></b>	2.6%
<b>Harvest by Management System (acres)<sup>2</sup></b>	.
Even-aged	902
Two-aged	125
Uneven-aged	0
<b>Harvest by Silvicultural Prescription (acres)<sup>2</sup></b>	.
Clearcut	153
Clearcut with Reserves	867
Individual Tree Selection	0
Strip Cuts	0
Overstory Removal	7
<b>Total Volume Harvested (MMBF)<sup>5</sup></b>	21.4
Cable/Shovel	21.4
Helicopter	0
<b>Net Stumpage Value (\$/ccf)<sup>6</sup></b>	.
Expected Bid	(5.50)
Current Market Revenue (\$)	(291,007)
<b>Direct Employment Potential During Sale(s)</b>	140
<b>New Classified Road Construction Miles</b>	9.8
<b>New Temporary Road Construction Miles</b>	10.9
<b>Existing Road Reconstruction Miles</b>	13.8
<b>Road Density (miles of road/sq. mile)</b>	0.3
<b>Road Miles Maintained Open (new and existing)</b>	13.0
<b>Number of Log Transfer Sites Used</b>	2
Drive-down	1
Bulkhead (barge) facility	1
<b>Logging Camps Proposed</b>	Crab Bay
Floating camp	.
<b>Scenic Ranking</b>	3
(based on vantage points of concern from scoping)	.
<b>ROS Class (% of Project Area)<sup>7</sup></b>	.
Primitive	38%
Semi-Primitive Non-Motorized	36%
Semi-Primitive Motorized	5%
Roaded Modified	21%
<b>% of High Value Deer and Marten Habitat (existing in 1999), Unharvested in WAA<sup>8</sup> 3629</b>	.
Deer (6,404 acres)	98%
Marten (6,770 acres)	97%

<sup>1</sup> Feasible acres are available for harvest as defined in the Forest Plan and have been checked for logging feasibility.

<sup>2</sup> Proposed Treated Acres are total acres (including riparian reserves) within units where harvest is proposed.

<sup>3</sup> Proposed Harvest Acres are acres that will actually receive cutting within units where harvest is proposed (does not include riparian reserves).

<sup>4</sup> Forested land is categorized into productive and non-productive forest land for purposes of managing timber. The Forest Service defines productive forest land as capable of producing 20 cubic feet per acre per year. The figures in this row are derived by dividing Proposed Harvest Acres by 35,917 (the amount of total productive forest acres within the project area).

<sup>5</sup> MMBF = million board feet of timber volume

<sup>6</sup> Parentheses denote negative values. These values are from 3<sup>rd</sup> quarter 2002.

<sup>7</sup> ROS = Recreation Opportunity Spectrum (see Recreation section in Chapter 3)

<sup>8</sup> WAA = Wildlife Analysis Area (see Wildlife section in Chapter 3)

## Reasons for the Decision

In making my decision, I worked to ensure consideration of all issues and took into account the competing interests and values of the public. A beneficial mix of resources and uses for the public continues to be available with the Selected Alternative within the framework of existing laws, regulations, policies, public needs and desires, and capabilities of the land, while meeting the stated purpose and need for the project.

- My decision to implement Alternative B is consistent with the 1997 Forest Plan and sound National Forest management. I have considered the need to help maintain an adequate timber supply that meets the market demand for timber and provides employment in Southeast Alaska in support of community stability. I have also considered the need to provide strong protection measures for fish, wildlife, and other resources important to subsistence, recreation, commercial, and other uses.
- The Selected Alternative provides 21.4 MMBF of wood for public consumption. As a result of a meeting with Tenakee Springs residents in response to the Chichagof Conservation Council (CCC) Alternative, I am authorizing units to be sold as a small sale(s) to meet the needs of small operators, an issue raised during scoping. Required infrastructure for small sales such as roads and LTFs will be carried by the larger sales. Units 1552, 1811, and 1850 are to be sold as part of a small sale(s) offering once a larger sale rebuilds the necessary infrastructure.
- My decision to implement the Selected Alternative, though it constructs more new roads than the other alternatives that were considered, helps repair the existing infrastructure needed to provide opportunities for a small sale(s) program and maintains existing roads necessary for the management of second growth. Mainline roads will remain open at Maintenance Level 2 for administrative purposes and incidental public use.
- The Selected Alternative relies more on even-aged management systems than the other alternatives that were considered; however, opportunities for selecting prescriptions that rely more on uneven-aged management are not forgone but deferred to future entries.
- The Selected Alternative does not build road on steep slopes and minimizes harvest on such slopes. Harvesting on slopes greater than 72 percent is avoided in all but three units: Units 1731, 1770, and 1853. The majority of the area in these units is not as steep as mapped, and they were found to be stable enough for timber harvest. These areas are less than one acre in size and have slope lengths less than 100 feet. Partial suspension is required to protect them. A Steep Slope Analysis for the Finger Mountain Project Area is found in the Planning Record.
- Based on the Financial Efficiency Analysis presented in the Final EIS (see the FIES, Chapter 3, Silviculture and Timber Management Section), the Selected Alternative has the most reasonable chance of selling of all the action alternatives considered. That analysis was completed using appraisal data for the third quarter 2002. Current appraisal data for the first quarter of 2003 indicates positive values for all cable portions of the four action alternatives. It is estimated that values for timber average approximately \$74/CCF higher than the original appraisals.
- Logging costs are the lowest for the Selected Alternative because it relies on cable logging rather than helicopter logging. Helicopter sales that need to carry infrastructure costs or sales that have high mobilization costs have a high risk of not selling. Sales reliant on helicopter logging are not likely to sell even under current market conditions.

# Record of Decision

- The Selected Alternative reduces potential scenic impacts from Tenakee Inlet and protects popular subsistence use areas. The majority of the harvest and road construction is proposed further up the valleys, away from saltwater, and in areas that are not visible from the inlet. A Landscape Architect will provide input on those units visible from Tenakee Inlet during unit layout. The Selected Alternative also minimizes the number of harvest units close to the shoreline where the heaviest subsistence activity occurs.
- The Selected Alternative meets the visual quality objectives (VQOs) as specified for priority travel routes and key viewsheds.
- One logging camp will be used. A floating camp will be used to access South Crab and Fog Creek Units. This will require boating to access units in the Inbetween Creek drainage. This eliminates building any new land camps and minimizes use of Seal Bay, leaving it available for recreation purposes while minimizing visual impacts.
- In comments received on the Draft EIS, some expressed concern about noise. Noise associated with helicopter logging will not exist since all prescriptions will require cable yarding.
- The National Roads Transportation Policy and Roadless Area Conservation EIS that became effective January 12, 2001 established new requirements for analyzing roads when planning to construct, reconstruct, or decommission roads on National Forest System lands. The roads included in the Finger Mountain Project Area represent the minimal road system needed to manage the National Forest System lands in the South Chichagof Island Analysis Area, and is consistent with the Forest Scale Roads Analysis Process (RAPS); this analysis is located in the planning record.
- The Roadless Area Conservation Final Rule (Roadless Rule) was signed by the Secretary of Agriculture on January 12, 2001. This rule generally established prohibitions on road construction, road reconstruction, and timber harvest in inventoried roadless areas on National Forest System lands. Currently the Roadless Rule is in effect and is the subject of a number of lawsuits. The Department of Agriculture and the Department of Justice have entered into an agreement with the state of Alaska (signed June 10, 2003) settling the state's lawsuit challenging the applicability of the Roadless Rule in Alaska. The Department of Agriculture committed to publishing for comment a proposed amendment to the Roadless Rule that excludes the Tongass National Forest. Publication of this proposed amendment is scheduled for the end of June 2003 and includes a public comment period. The Department made no representation regarding the content or substance of any final amendment to the Roadless Rule that may result. The Finger Mountain Project meets the transition criteria included in the Roadless Rule, which allows projects on the Tongass National Forest to continue if the Notice of Availability for their Draft Environmental Impact Statement was published in the Federal Register prior to January 12, 2001. A Notice of Availability for the Draft Environmental Impact Statement for Finger Mountain Timber Sale(s) was issued in January 2000.

## How Issues are Addressed

The following section summarizes the significant issues within the scope of the project and describes how the Selected Alternative addresses each of the significant issues.

### Issue Area 1: Old-growth Associated Wildlife

The Selected Alternative incorporates and applies 1997 Forest Plan standards and guidelines for riparian areas, beach and estuary fringe, goshawk, and marten. No timber harvest will

occur in beach or estuary fringe habitats. Units proposed for harvest were selected and designed to preserve the integrity of old-growth habitat and to maintain connectivity. Each VCU in the project area includes a small old-growth reserve (OGR), part of a forest-wide system of habitat reserves. All of the reserves have been evaluated with interagency involvement. Together these reserves encompass 11,250 total acres, of which 6,226 are productive old-growth (POG) habitat. The Selected Alternative will include the Interagency recommended additions of 476 acres (315 acres in POG) to VCU 231 and 117 acres (110 acres in POG) to VCU 232. These modifications are included in a non-significant amendment located in Appendix 1 of this ROD. With these additions, the Selected Alternative will comply with the 1997 Forest Plan standards for small OGR. Because harvest activities will not occur within OGR, there will be no direct effects to OGR as a result of the Selected Alternative. Therefore, the Selected Alternative maintains important old-growth forest connections between blocks of key habitat.

Within existing forested habitat (55,731 acres), approximately 61 percent (33,967 acres) is POG habitat. An estimated 6 percent (3621 acres) of these stands have coarse canopy texture (for a description of coarse canopy, please refer to the discussion of habitat connectivity in the Biodiversity and Old-growth section of the FEIS, Chapter 3). The Selected Alternative proposes to harvest 3 percent of the POG habitat (910 acres). Overall, 97 percent of the existing POG will be maintained in the project area. The Selected Alternative proposes to harvest 3 percent of coarse canopy habitat. Lower elevation (0 to 800 feet) POG habitat is important to deer because it provides habitat during the winter. The Selected Alternative proposes to harvest 3 percent (530 acres) of low-elevation POG in the project area.

Habitat parameters that provide for high-value deer habitat include higher volume stands on south aspects, lower elevations, and low average snow depth. Reduction of high-value deer habitat from the existing level will occur only in wildlife analysis area (WAA) 3629. The Selected Alternative proposes a 3 percent reduction in high-value deer habitat within this WAA. A total of 195 acres of high-value deer habitat in the project area will be harvested as a result of implementing the Selected Alternative.

The Selected Alternative will reduce high-value marten habitat by 3 percent (188 acres) within WAA 3629. In addition, marten harvest from trapping can substantially increase when road densities reach greater than 0.2 mile per square mile and roads are connected to communities. The current project area road density is 0.1 mile per square mile, with higher densities within VCUs 230, 233, and 234. However, these VCUs are not part of an interconnected road system and are not expected to receive the same kind of harvest that might otherwise be predicted. During implementation of the project, the road density of the project area will be 0.3 mile per square mile. As a result of implementing the road management objectives, the open road densities after completion of the harvest activities will be below 0.2 mile per square mile, and the effects of trapping will not be significant.

## Issue Area 2: Subsistence Opportunities

Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA) requires the analysis of potential effects on subsistence uses and resources resulting from management activities. This analysis typically focuses on food-related resources, which are the ones more likely to be affected due to loss or alteration of habitats from land-altering activities. The 1997 Forest Plan concluded that, Forest-wide, under full implementation of the 1997 Forest Plan, the only subsistence resource that may, in the future, be significantly restricted due to management activities is deer. For this reason, the subsistence analysis included in the FEIS focuses primarily on the effects of the project on deer and deer habitat.

Since no harvest or road construction is proposed in wildlife analysis area (WAA) 3309 (VCU 246), no effects on subsistence are anticipated. (See Figure Wildlife-1 in Chapter 3 for WAA boundaries.) Tenakee Springs residents harvest approximately 32 percent of their subsistence

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deer from WAA 3629 (VCUs 230 to 234). Although several other communities, including Haines, Skagway, and Yakutat, also use the area, it is a small part of where these communities' entire harvest is obtained. The Selected Alternative proposes activities in this WAA. The effects on subsistence to Tenakee Springs are analyzed in terms of access to subsistence resources, abundance, distribution, and competition for these resources.

There are no anticipated restrictions on access to the project area for subsistence purposes. The Selected Alternative will increase access to WAA 3629 from constructed LTFs and roads. However, due to its location across Tenakee Inlet, very little use by motorized vehicles or ATVs is expected.

Declines in deer abundance and changes in distribution are analyzed in terms of habitat loss due to harvest of POG and, specifically, deer winter habitat. These are discussed in Issue 1 (Old-growth-associated wildlife). Declines due to loss of deer winter habitat are reduced through implementation of several Forest Plan standards and guidelines. These include a 1,000 foot beach and estuary fringe no-harvest zone along all saltwater shoreline and riparian no-harvest buffers around all streams that have a potential to effect fish habitat. In addition, at least one small OGR is located within each VCU (major watershed).

The average deer harvest for Tenakee Springs in the communities' three primary use areas (WAAs 3629, 3526, and 3627) is currently at 6.8 percent of habitat capability. This is below the anticipated level where reduced hunter efficiency is anticipated (10 to 20 percent habitat capability) and below the level at which a restriction on hunter access may be necessary (greater than 20 percent). After 100 years of full implementation of the Forest Plan, demand by all hunters in these WAAs is projected to reach 16.4 percent of habitat capability. This is still below the 20 percent level set for restricting hunter access. Our analysis shows that no significant restrictions on any subsistence resources from past, current, and reasonably foreseeable future actions will occur with implementation of the Selected Alternative (see Chapter 3).

There may be temporary increases in competition during harvest operations from people staying at the floating logging camp located in the project area. This will be a short-term effect for approximately 3 to 5 years per sale (some may run concurrently) while the roads are constructed and the sale is harvested.

## Issue Area 3: Scenic Resources and Recreation Opportunities

The Selected Alternative is consistent with the visual quality objectives (VQOs) established within the 1997 Forest Plan. In addition, it complies with the Forest Plan standards and guidelines for beach and estuary fringe and riparian buffers. No timber harvest will occur within 1,000 feet of any shoreline or estuary area, or around any streams with the potential to affect fish habitat or water quality in any alternative. These no-harvest areas will greatly reduce scenic impacts visible from saltwater locations surrounding the project area.

The Selected Alternative was analyzed from Forest Plan identified priority travel routes and use areas. Some units within the Inbetween drainage (VCU 230) will be visible from areas in the northwest reaches of Tenakee Inlet. The Selected Alternative will include some visible harvest, but most units are located two or more miles up the valley. Harvest in this drainage will not be seen from the primary travel routes.

Several harvest units located at the mouth of Crab Bay (VCU 233) are visible from the ferry route and small boat route in Tenakee Inlet. The Selected Alternative includes harvest units that are visible from Crab Bay, Tenakee Inlet, and Tenakee Springs. However, visual effects resulting from harvest will still be within the VQOs established for the area.

Four main vantage points were identified during scoping as locations from which the views may be adversely impacted by timber harvest and associated activities. These included the views from Tenakee Springs, Tenakee Inlet, Crab Bay, and Saltery Bay. The views from Saltery Bay will not be affected by the Selected Alternative, as harvest has been deferred in this area at this time. The alteration of the landscape visible from Tenakee Springs, Tenakee Inlet, and Crab Bay, though visible, is restricted to the background, with no proposed activities within areas to which the Modified Landscape visual quality objective is assigned.

Given the proposed harvest and road construction in VCU 230, 233, and 234, people seeking to use this area for the existing primitive recreation experience will possibly have to go elsewhere. The Selected Alternative will have an impact on recreation experiences in the entire project area due to the amount of ground disturbance and time necessary to complete the harvest activities.

Like the other action alternatives considered, road construction and harvesting associated with the Selected Alternative will change the recreation opportunity spectrum (ROS) from a more primitive experience to a more developed experience. The Selected Alternative will decrease the area available for Semi-primitive Non-motorized opportunities by 8 percent. These areas will provide Roaded Modified recreation opportunities following the sale(s).

The Selected Alternative will not change the existing identified Recreation Places within the Crab Bay Semi-primitive Motorized Recreation Place.

## **Issue Area 4: Log Transfer Facilities, Camps, and the Marine Environment**

Tenakee Inlet is considered one of fourteen major herring stock areas of Southeast Alaska and Yakutat. When the amount of herring produced in this area exceeds 3,000 tons, the Alaska Department of Fish and Game (ADF&G) has allowed a bait fishery. The fishery occurred from 1978 through 1990. Weak herring returns prevented fishing from 1990 through 1996. Since 1996, herring stock numbers have rebounded, and the bait fishery has been reopened. For 12 of 21 spawning seasons from 1979 through 1999, herring spawn was documented by ADF&G along the shoreline at or near the Crab Bay LTF site.

The Selected Alternative will reconstruct and use an LTF at the Crab Bay site on Tenakee Inlet. LTF reconstruction and operation at this site have the potential to impact herring due to concentrations of tree bark from rafted logs, sediment produced during LTF reconstruction and operation, and crushing of eggs deposited on the slide ramp. The Selected Alternative will reconstruct a bulkhead facility that will be used to barge all logs. Timing restrictions will apply during reconstruction but not operation. No logs will be placed or stored directly in saltwater, nor will equipment be operated on intertidal rocks.

The Selected Alternative will construct and operate a new temporary drive-down ramp near the mouth of Inbetween Creek (VCU 230). Based on information obtained from the State, we do not expect this site to have any effect on the herring spawn in the Inlet.

The large size, linear shape, and saltwater location of LTFs generally present a very strong visual impact when viewed within a foreground distance. However, their relatively low profile helps to blend them into background views. Drive-down and slide-type LTFs usually present less of a visual impact than larger bulkhead-type facilities. The bold form of bulkheads associated with barge LTFs prevents them from blending into the surrounding landscape. Often, the type of material and color of the bulkhead create strong contrasts that can be seen even in the background.

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The temporary drive-down ramp LTF proposed at Inbetween in the Selected Alternative should not present a dramatic visual impact from the Inlet, and this LTF will be visible only for the duration of the sale(s). The Selected Alternative also includes a bulkhead facility at the Crab Bay LTF site. This facility will have the greatest scenic effect, as this LTF site is located on Tenakee Inlet across from Tenakee Springs. However, the bulkhead facility at the Crab Bay LTF site minimizes bark accumulation, which was a concern.

Clearings for decking and scale yards, and logging camps may also add to the visual impacts associated with LTFs. However, their location is usually on level or gently sloping sites, which helps to absorb much of their visual contrasts when viewed from saltwater. A floating logging camp will be used for this project in Crab Bay in the Selected Alternative. Visual impacts from these are considered to be much less than more permanent upland camps.

## Issue Area 5: Economic Opportunities for Small-Scale Timber Operators

The Selected Alternative will provide the opportunity for offering small sales after completion of the Finger Mountain Timber Sale(s) Project. The project will result in construction of 9.8 miles of new system roads that will access more timber, and 13 miles of road will be maintained for vehicle access following the sales. The Selected Alternative has the lowest risk of not selling thereby ensuring the infrastructure is rebuilt to sustain a small sale(s) program. Infrastructure needs will be carried by larger sales. Due to the reconstruction costs of existing roads and the construction of an LTF, a small sale consisting of just one or a few units would provide insufficient volume to make a viable sale. As part of my decision, I am setting aside volume specifically for a small sale(s) that could be sold once the infrastructure needs have been met by a larger sale offering. By setting aside Units 1552, 1811, and 1850 for a small sale(s), the Finger Mountain Timber Sale(s) Project provides opportunities for small-scale timber operators. Cable yarding will be used in identified units, and extensive system or temporary road construction will not be required.

## Public Involvement

The following summarizes the public involvement process and opportunities for collaborative stewardship activities with other agencies for the Finger Mountain Timber Sale(s) Project.

During the scoping process, we invited the participation of affected federal, state, and local agencies, federally recognized Indian Tribes, and other interested groups and individuals. The Finger Mountain Project Area is a subset of the Southeast Chichagof project area analysis that was completed in 1992. Scoping results from that project were also used in designing the Finger Mountain Timber Sale(s). In addition, numerous letters, contacts, and meetings took place as a result of the Finger Mountain scoping effort. To date, the public has been invited to participate in the project in the following ways.

A Notice of Intent (NOI) was published in the Federal Register in June 1997 when it was decided that an EIS was to be undertaken for the project. Two additional NOIs were published in July 1997 and May 1999 when changes were made to the proposed action.

In July 1997, a letter disclosing preliminary issues from previous projects and identifying new issues for the Finger Mountain Project was mailed to approximately 750 individuals and groups. A second letter was mailed later in the same month to inform people of additional units added into the analysis and seeking further public comment about significant issues related to the project. A third update was mailed in May 1999 informing people of changes made to the project as a result of the new 1999 Record of Decision on the Forest Plan.

Announcements about the project were printed in the *Daily Sitka Sentinel* and the *Juneau Empire* with each NOI published. They were also broadcast on KCAW and KSBZ radio in Sitka. Numerous radio interviews were conducted to discuss the project. Additional public notices were printed to advertise public meetings. Flyers were posted in Tenakee Springs and Angoon to advertise meetings about the project in the smaller communities.

Throughout the scoping period, various meetings, field trips, and written correspondence between the Forest Service and other individuals, agencies, and organizations took place. Participants included Alaska Department of Fish and Game (ADF&G), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), Alaska Department of Environmental Conservation, and the Office of General Council. In addition, a representative from the USFWS was invited to be a full participant in the planning process for Finger Mountain. He was present at many of the Interdisciplinary Team meetings at which issues were defined and alternatives were developed. We have maintained frequent contact to keep the USFWS updated on our progress and to make sure we are addressing their concerns.

In September 1997, two meetings were held with the Alaska Department of Governmental Coordination, Alaska Department of Fish and Game (ADF&G), Alaska Department of Environmental Coordination (ADEC), and the U.S. Fish and Wildlife Service (USFWS) regarding bringing the Finger Mountain Project (and several other projects) into compliance with the new Forest Plan standards and guidelines. On February 22, 1999 and October 3, 2000 a meeting was held in Sitka with ADF&G to discuss their comments to the DEIS. In addition, interagency reviews of small OGR were conducted at the project level as required by the 1997 Forest Plan to determine whether reserves meet 1997 Forest Plan requirements (February 22, 1999 and April 8, 2003). A public ANILCA 810 Subsistence Hearing was held in Tenakee Springs on May 15, 2003. The purpose of the hearing was for subsistence users to provide testimony about subsistence issues in the Finger Mountain Project Area.

In April 1997, a preliminary scoping meeting was held in Tenakee Springs to contact people who might be gone later in the summer during official scoping. In July 1997, public meetings were held in Tenakee Springs and Sitka to identify issues. Another public meeting was held in September 1997 in Tenakee Springs to talk about the project in addition to the Hanus Bay Alternatives to Clearcutting study. As a result of concerns raised at the meeting in Tenakee Springs, a field trip to Corner Bay was held with people from Tenakee Springs to look at regeneration in previously harvested areas. A meeting was also held in Angoon at this time to identify issues related to the Finger Mountain Project. In addition, public information meetings were held in Tenakee Springs and Sitka in November/December 1998 to describe the preliminary alternatives developed and to determine whether there were issues not identified or addressed. Another meeting was held in January of 2000 with residents of Tenakee Springs to discuss the CCC Alternative and other issues.

On April 24, 2001, the Forest Service and the Sitka Tribe of Alaska (STA) entered into a Memorandum of Understanding (MOU)

“... to establish a framework for cooperative relationships between the Forest Service and the Sitka Tribe of Alaska for carrying out the unique relationship and obligations the United States Government has with Indian Tribal Governments...[and to] serve as a vehicle through which the Forest Service maintains a legal and political relationship with the local tribal government in Sitka.”

In keeping with the spirit of the MOU, the Interdisciplinary Team made a diligent effort to maintain and strengthen the Forest Service’s working relationship with STA throughout planning for this project. We attended tribal council meetings once a month to update them on our project as well as other district projects.

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The Angoon Community Association (ACA) was also consulted during the planning phases of this project. ACA was invited to attend an open house conducted by the Forest Service in Angoon in August 1997. More recently, in June 2002 the ACA was contacted by phone to determine whether it had any interest in consultation on the Finger Mountain Timber Sale(s) Project. The ACA expressed no further interest in consultation at that time.

## Alternatives Considered

Several alternatives were considered during the planning process, but were eliminated from detailed study (Alternatives C, E, G, and the Chichagof Conservation Council Alternative). These alternatives were dropped primarily because other alternatives were better at addressing the issue to which the alternative was designed to respond. For a complete discussion of the alternatives eliminated from detailed study, please refer to Chapter 2 of the Finger Mountain Timber Sale(s) FEIS. The alternatives that were considered in detail in the FEIS are described in this section.

### Alternative A (No-Action)

This alternative proposes no new commercial timber harvest or road construction in the Finger Mountain Project Area at this time. Free use permits would not be restricted under this alternative. Road maintenance and administrative use would continue on 2.7 miles of existing road. Alternative A addresses several issues by having no adverse effect on old-growth associated wildlife, subsistence, scenic views, or the marine environment other than that which would occur through natural disturbance processes including tree windthrow, or landslides. There would also be no decrease in primitive recreation opportunities.

The No-Action Alternative does not preclude timber harvest from the Finger Mountain Project Area at some time in the future. The Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] 1502.14d) require that a “no action” alternative be analyzed in every EIS. This alternative represents the existing condition against which the other alternatives are compared.

### Action Alternatives

For the following alternatives, suitable timber lands are managed for the production of sawtimber and other wood products on an even-flow, long-term sustained yield basis; the timber yield produced contributes to a Forest-wide sustained yield. An extensive road system provides access for timber management activities, recreation uses, hunting and fishing, and other public and administrative uses, though some roads may be closed, either seasonally or year-long, to address resource concerns. Management activities will generally dominate most seen areas. Tree stands are healthy and in a balanced mix of ages classes from young stands to stands of trees of harvestable age and ranging from 40 to 100 acres in size. Recreation opportunities associated with roaded settings from Semi-primitive to Roaded Modified are available. A variety of wildlife habitats, predominately in the early and middle successional states, is present.

### Alternative B

Alternative B is the project proposed action and the Selected Alternative. The emphasis of this alternative is to reduce potential scenic impacts visible from Tenakee Inlet and to protect popular subsistence use areas. The majority of the harvest and road construction is proposed further up the valleys, away from saltwater, and in areas that are not visible from the inlet. It also minimizes harvest near saltwater where the heaviest subsistence activity occurs. The design of this alternative is based on the ROD for the Southeast Chichagof FEIS, approved in 1992.

Two LTFs will be used. A drive-down ramp LTF will be constructed near the previously used site at the mouth of Inbetween Creek on Tenakee Inlet. This will be removed upon completion of this timber sale. A bulkhead for barge use will be reconstructed on the existing

site at the mouth of Crab Bay. Restrictions on the reconstruction and use of these facilities will eliminate adverse impacts to herring spawn in Tenakee Inlet. A floating logging camp is proposed in Crab Bay in order to access the Inbetween and Crab Bay LTFs.

The timber volume proposed for sale in Alternative B, 21.4 million board feet (MMBF), will provide opportunities for timber harvesting and help move the project area towards the desired future condition identified in the Forest Plan by converting 936 acres of old-growth stands to young growth. Alternative B was analyzed as two smaller sales, the smallest being 8,798 thousand board feet (MBF). However, smaller sales could be sold from this alternative by advertising a single harvest unit separate from the remaining volume. This could provide for sales as small as 416 MBF. All units will be harvested using cable or shovel yarding systems.

Alternative B will construct 9.8 miles of new National Forest System roads and 10.9 miles of new temporary road construction and would reconstruct 13.8 miles of existing roads to access timber. After harvest activities are completed, a total of 13.0 miles of road would remain open in VCUs 230, 233, and 234. All other roads would be closed to motorized vehicles.

## **Alternative D**

The emphasis of Alternative D is to minimize potential effects to areas of key wildlife not already covered by Forest Plan direction. This is responsive to the “old-growth-associated wildlife” issue, which identified concerns for maintaining important habitat connections for wildlife travel. Units were selected to maintain connections between alpine and saltwater elevations, as well as horizontal landscape connections between high-value habitats. Some units would be selectively harvested to maintain forest structure and cover in these important areas.

Two LTFs would be used. A drive-down ramp LTF would be constructed near the previously used site at the mouth of Inbetween Creek on Tenakee Inlet. This would be removed upon completion of this timber sale. A low-angle slide facility would be reconstructed on the existing site at the mouth of Crab Bay. Restrictions on the reconstruction and use of this facility would eliminate adverse impacts to herring spawn in Tenakee Inlet. A floating logging camp is proposed in Crab Bay, which would access the Inbetween and Crab Bay LTFs.

The timber volume proposed for sale in Alternative D, 19.8 MMBF, would provide opportunities for timber harvesting, and help move the project area towards the desired future condition of the Forest Plan by converting 994 acres of old-growth forest stands to provide a sustained yield of timber and a balanced mix of age classes. An additional 154 acres would be harvested but remain in an uneven-aged structure. Alternative D was analyzed as two smaller sales, with the smallest being 6,829 MBF. However, smaller sales could be sold from this alternative by advertising a single unit separate from the remaining volume. This could provide for sales as small as 28 MBF.

Alternative D includes 6.7 miles of new National Forest System road construction, 8 miles of new temporary road construction, and 13 miles of existing road reconstruction. After harvest activities are completed, a total of 4.6 miles of road would remain open in VCU 230. All other roads would be closed to motorized vehicles. This would reduce hunter access, which has the potential to impact the brown bear population in the area following the timber sale(s).

## **Alternative F**

The emphasis of Alternative F is to further minimize potential effects to scenic resources in Tenakee Inlet and Crab Bay beyond that which is required in the Forest Plan. Harvest prescriptions were selected to reduce or eliminate potential scenic effects viewed from these areas. Harvest in the Inbetween drainage was deferred to minimize harvest visible from the Inlet. Individual tree selection harvest is also prescribed in some units to maintain important

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wildlife habitat structure. Alternative F also minimizes construction of new roads by reconstructing existing roads and constructing new temporary roads.

One low-angle slide LTF would be reconstructed at the existing site near the mouth of Crab Bay. Restrictions on the reconstruction and use of this facility would eliminate adverse impacts to herring spawn in Tenakee Inlet. The logging camp proposed in this alternative is a floating logging camp in Crab Bay.

The timber volume proposed for sale in Alternative F, 10.9 MMBF, would provide opportunities for timber harvesting and help move the project area towards the desired future condition of the Forest Plan by converting 358 acres of old-growth forest stands to provide a sustained yield of timber and a balanced mix of age classes. An additional 573 acres would be harvested but remain in an uneven-aged structure. Alternative F was analyzed as one sale that would rebuild infrastructure; however, smaller sales could be sold from this alternative by advertising a single unit separate from the remaining volume. This could provide for sales as small as 20 MBF.

Alternative F includes 4.3 miles of new temporary road construction and 9.5 miles of existing road reconstruction. After harvest activities are completed, a total of 7.3 miles of road would remain open in VCUs 230, 233, and 234. This includes 2.7 miles of existing road that is currently maintained in VCU 230 that would not be used in this alternative. All other roads would be closed.

## Alternative H

The emphasis of this alternative is to promote a greater number of very small sale opportunities by first rebuilding existing infrastructure. The alternative was designed to try to incorporate some of the ideas contained within the CCC Alternative such as the following:

“...eliminate new permanent road construction (minimizing effects to brown bears), emphasize alternative logging practices where feasible (minimizing effects on subsistence and scenic resources), preclude the construction of new LTFs (minimizing impacts on the marine resources and uses), and establish opportunities for the long-term promulgation of very small timber sales from this sale area (maximizing economic benefit for Tenakee Springs residents).”

Harvest in the Inbetween drainage was deferred to minimize visible harvest from the Inlet. One low-angle slide LTF would be reconstructed at the existing site near the mouth of Crab Bay. Restrictions on the reconstruction and use of this facility would eliminate adverse impacts to herring spawn in Tenakee Inlet. The logging camp proposed in this alternative is a floating logging camp in Crab Bay.

The timber volume proposed for sale in Alternative H, 4.1 MMBF, would provide opportunities for timber harvesting and help move the project area towards the desired future condition of the Forest Plan by converting 250 acres of old-growth forest stands to provide a sustained yield of timber and a balanced mix of age classes. Alternative H was analyzed as one larger sale needed to rebuild the infrastructure; however, smaller sales could be sold from this alternative by advertising single or multiple units separate from the remaining volume. This could provide for sales as small as 20 MBF.

Alternative H includes 0.6 miles of new National Forest System road construction, 3 miles of new temporary road construction, and 5.9 miles of existing road reconstruction. Following completion of harvest activities, a total of 4.0 miles of road would remain open in VCUs 230, 233, and 234. This includes 2.7 miles of existing road that is currently maintained in VCU 230 that would not be used in this alternative. All other roads would be closed.

## Planning Record

The planning record for this project includes the Draft EIS, Final EIS, Forest Plan, all material incorporated by reference, and all materials produced during the environmental analysis of this project. The planning record is available for review at the Sitka Ranger District office.

## Mitigation Measures

Mitigation measures applicable to the Selected Alternative include those contained in the standards and guidelines of the 1997 Forest Plan and applicable Forest Service Manual (FSM) and Forest Service Handbook (FSH) policy and direction. These measures will minimize or negate many potentially adverse environmental effects from timber harvest and road construction. Water quality and fisheries habitat are protected through the application of Best Management Practices (BMPs) as stated in the Soil and Water Conservation Handbook (FSH 2509.22) and the direction contained in the Aquatic Habitat Management Handbook (FSH 2609.24). For a description of what constitutes a BMP, please refer to the Glossary in Chapter 4 of the Finger Mountain Timber Sale(s) FEIS. The Tongass Timber Reform Act (TTRA) requires a minimum 100-foot buffer for all Class I streams and for Class II streams directly flowing into Class I streams (stream class definitions may be found in the Glossary in the FEIS, Chapter 4). Protection provided by 1,000-foot beach and estuary fringes, along with the stream buffers and other stream protection measures adopted in this decision are equal to or exceed TTRA requirements and enforceable policies of the State of Alaska under the Coastal Zone Management Act (CZMA).

Resource management mitigation measures were applied in the development of all of the project action alternatives. Harvest units and road corridors were located to avoid, reduce, minimize, or eliminate the adverse effects of timber harvest actions to other resource uses and activities. The Mitigation Measures section of Chapter 2 of the Final EIS discusses those measures common to all alternatives. Adopted mitigation measures include all practicable means to avoid or minimize any environmental harm from the Selected Alternative (40 CFR 1505.2 (b)). The Final EIS includes harvest road cards and unit cards (Appendices B and C in the FEIS), which incorporate site-specific mitigation measures. A listing of site-specific mitigation measures applicable to each unit and road is found in Appendix E of the Final EIS. Resource concerns and mitigation measures may be refined further during final layout, when specialists have one more opportunity to revise their unit and road card recommendations.

## Legislation Related to this EIS

The following laws, regulations, and executive orders are relevant to the preparation of this EIS. Some are specific to Alaska, while others pertain to all Federal lands.

- Administrative Procedure Act, 1966
- Alaska Coastal Zone Management Act of 1977 (as amended)
- Alaska National Interest Lands Conservation Act (ANILCA) of 1980
- Alaska Native Allotment Act of 1906
- Alaska Native Claims Settlement Act (ANCSA) of 1971
- American Indian Religious Freedom Act of 1978
- Archaeological Resource Protection Act of 1980
- Bald and Golden Eagle Protection Act, USC 668 (1940 as amended)
- Clean Air Act of 1970 (as amended)
- Clean Water Act of 1977 (as amended)
- Coastal Zone Management Act (CZMA) of 1976 (as amended)
- Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR, Parts 1500-1508)

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- Endangered Species Act of 1973 (as amended)
- Federal Cave Resource Protection Act of 1988
- Forest and Rangeland Renewable Resources Planning Act of 1974
- Magnuson-Stevens Fishery Conservation and Management Act of 1996
- Marine Mammal Protection Act of 1972
- Multiple-Use Sustained Yield Act of 1960
- National Environmental Policy Act (NEPA) of 1969 (as amended)
- National Historic Preservation Act of 1966 (as amended)
- National Forest Management Act (NFMA) of 1976 (as amended)
- Native American Graves Protection and Repatriation Act of 1990
- Tongass Timber Reform Act (TTRA) of 1990
- Wild and Scenic Rivers Act of 1968
- Executive Order 11593 (cultural)
- Executive Order 11988 (floodplains)
- Executive Order 11990 (wetlands)
- Executive Order 12898 (environmental justice)
- Executive Order 12962 (recreational fisheries)

## Findings Required by Law

### National Forest Management Act

The National Forest Management Act (NFMA) requires that specific determinations be made in this Record of Decision, including consistency with the existing Forest Plan. It also requires a determination of clearcutting as the optimal method of harvesting and specific authorization of clearcuts over 100 acres in size. These requirements are satisfied in the following paragraphs.

### Tongass Land and Resource Management Plan, 1997

I have determined, through review of the analysis in the Final EIS for the Finger Mountain Timber Sale(s) Project, that the Selected Alternative incorporates all applicable management direction from the 1997 Forest Plan and is fully consistent with its goals, objectives, Forest-wide standards and guidelines, and management area prescriptions as they apply to the project area.

### Clearcutting as the Optimal Method of Harvesting

Even-aged management in the form of clearcutting is to be used where the management objective is to meet timber production objectives established in the 1997 Forest Plan; where there is a risk of dwarf mistletoe re-infection; and where risk of windthrow is determined to be high. While dwarf mistletoe is not a major problem within the project area, there are areas of high incidence. All of the harvest units being proposed for clearcut with green tree retention as a harvest method in the Selected Alternative have either a high level of decadence or disease, or a high risk of windthrow. Clearcutting with green tree retention will help meet the objective of maintaining fast-growing, disease-free stands of mixed species and is the optimum method of harvesting, considering the following factors.

- Hemlock dwarf mistletoe (*Arcenothobium tsugense*), an important parasite of western hemlock, can best be controlled by clearcutting. Eliminating residual overstory trees infected with dwarf mistletoe prevents infection of western hemlock in the new stand.
- Risk of blowdown in residual stands is eliminated. The chance of blowdown along cutting boundaries is increased, but can be reduced through proper design of cutting units.

The Chief of the Forest Service established provisions in June 1992 for reducing clearcutting on National Forest System Lands. The provisions stated that clearcutting is to be limited to areas that involve at least one of seven specific circumstances. The clearcuts with reserves prescribed in the Finger Mountain Project Area meet the following circumstances as specified in the 1992 direction:

- provide for the establishment and growth of desired trees or other vegetative species that are shade intolerant, and
- preclude or minimize the occurrence of potentially adverse impacts of insect or disease infestations, windthrow, logging damage, or other factors affecting forest health.

### **Clearcuts Over 100 Acres in Size**

The Selected Alternative does not include any units that create openings exceeding 100 acres.

### **Tongass Timber Reform Act**

Harvest units were designed and will be located to maintain a minimum 100-foot buffer zone for all Class I streams and Class II streams that flow directly into Class I streams, as required in Section 103 of the TTRA. The actual widths of these buffers will often be greater than the 100-foot minimum to help ensure a windfirm boundary or to protect fish habitat. The design and implementation direction for the Selected Alternative incorporates BMPs for protection of all stream classes.

### **Endangered Species Act**

The Selected Alternative will not have a direct, indirect, or cumulative effect on any threatened or endangered species in the Finger Mountain Timber Sale(s) Project Area. A biological assessment has been completed, and the U.S. Fish and Wildlife Service and the National Marine Fisheries Service have concurred with my determination that this action will not have any adverse impacts on any threatened or endangered species.

### **Bald and Golden Eagle Protection Act**

The Selected Alternative will not have a direct, indirect, or cumulative effect on any bald eagle or bald eagle nest tree. Management activities within 330 feet of a bald eagle nest tree are restricted by a 1990 Memorandum of Understanding (MOU) between the Forest Service and the U.S. Fish and Wildlife Service to facilitate compliance with the Bald and Golden Eagle Protection Act. There are no variances from the MOU required for implementation of the Selected Alternative. If a nest tree is located in or near on-going timber management activities, the terms of the MOU will apply.

### **Clean Water Act**

The location of harvest units and roads for the Selected Alternative was guided by standards, guidelines, and direction contained in the 1997 Forest Plan and applicable Forest Service Manual and Handbook policy and direction to ensure compliance with the Clean Water Act. The road and unit cards (Appendices B and C of the FEIS) contain specific details on practices prescribed to prevent or reduce non-point sediment sources. Implementation and site-specific application and monitoring of approved BMPs are expected to comply with applicable State Water Quality Standards Regulations. All roads, landings, and rock pits would be designed and constructed in accordance with the applicable BMPs listed at 33 CFR 323.4(a). No permits under Section 404 of the Clean Water Act would be required.

A monitoring plan to detect and evaluate possible effects of bark accumulations, oil sheens, and surface run-off will be implemented as a part of the permitting process for LTFs (BMP 14.4 and FSH 2509.22).

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## Essential Fish Habitat

The potential effects of the Finger Mountain Timber Sale(s) Project on essential fish habitat have been evaluated. For specific information regarding essential fish habitat and potential impacts, refer to the EFH Assessment located in the Project Planning Record. Analysis completed in the cumulative effects sections of Chapter 3 of the FEIS indicate no significant changes to Riparian Management Areas (RMAs) or floodplains due to proposed management activities.

In evaluating the potential effects on essential fish habitat the following factors were considered:

- Forest Plan standards and guidelines for process group riparian buffers have been applied in all instances on Class I, II, and III streams,
- the BMPs described in the unit and road cards for the Selected Alternative provide assurance of water quality and aquatic habitat protection for freshwater streams and marine waters affected by the project,
- the exclusion of harvest on slopes greater than 72 percent, unless field review by professional soil scientists, indicates harvest on these slopes can be accomplished with no damage to other resources, and
- road construction in the Selected Alternative includes new road crossings of Class I or II streams, which will be designed to meet updated Tongass National Forest guidelines for ensuring fish passage.

Based on the above factors, the risk of measurable impact on essential fish habitat has been minimized in the project area. I have determined that this project “may adversely affect EFH.” Consultation with the National Marine Fisheries Service has occurred.

## National Historic Preservation Act

Cultural resource surveys have been conducted in the project area. The State Historic Preservation Officer (SHPO) has been consulted, and the provisions of 36 CFR part 800 have been met.

Timber sale contracts contain enforceable measures for protecting any cultural resource that might be discovered during sale operations. All ground-disturbing activities associated with this action have received cultural resource clearance by the SHPO. Based on surveys conducted by professional archaeologists in the project area and clearance by SHPO, I have determined there will be no significant effects on cultural resources.

## Federal Cave Resource Protection Act of 1988

The actions in the Selected Alternative will not have a direct, indirect, or cumulative effect on any significant cave because no caves were identified through field reconnaissance of the Finger Mountain Project Area.

## ANILCA Section 810 Subsistence Evaluation and Findings

A subsistence evaluation was conducted for the alternatives considered in detail in accordance with ANILCA Section 810. This evaluation included a Subsistence Hearing in the town of Tenakee Springs in May 2003. The analysis indicates that the potential foreseeable effects from the action alternatives in the Finger Mountain Timber Sale(s) Project Area do not indicate a significant possibility of a significant restriction of subsistence uses of wildlife, fish, shellfish, marine mammals, other foods, or timber resources in the project area due to timber management activities.

With the application of the 1997 Forest Plan standards and guidelines, no significant adverse effects on fisheries or marine mammal or invertebrate species are anticipated under any alternative (see the Water, Soil, and Fish section of Chapter 3 in the FEIS). There are no anticipated significant adverse effects for wildlife species (excluding deer). This is because standards and guidelines for wildlife and small OGR will be implemented (see the Management Indicator Species and Endemic Terrestrial Mammals section of Chapter 3 in the FEIS). In addition, during the planning process units proposed for harvest were selected and designed to preserve key fish and wildlife habitats and the integrity of old-growth habitat. Units were also designed to maintain POG habitat and connectivity. This determination for deer is also based on the potential resource effects on the abundance and distribution of deer, access to deer, and competition for deer. The analysis displays that there may be some potential impact to subsistence deer use in the WAAs historically used by residents of Tenakee Springs (WAAs 3526, 3629, and 3627) by the year 2005. This potential for impact to subsistence deer use assumes full 1997 Forest Plan timber harvest. Habitat capability for deer is likely to decrease slightly by that time, while demand for deer is likely to increase. However, subsistence use of deer by all hunters in these WAAs is projected to be less than 10 percent of habitat capability. For these reasons, the action alternatives would not directly, indirectly, or cumulatively present a significant possibility of a significant restriction on subsistence use of any resources in the project area.

The 1997 Forest Plan FEIS included a cumulative effects analysis of resource development on subsistence resources. Based on that analysis, the 1997 Forest Plan ROD concluded that full implementation of the Forest Plan "may result in a significant restriction to subsistence use of deer due to the potential effects of projects on the abundance and distribution of these resources, and on competition for these resources" (Forest Plan ROD 1997, p. 36). It is not possible to substantially reduce timber harvest in one area and concentrate it in other areas without affecting subsistence resources and uses important to one or more rural communities (Forest Plan ROD). For this reason, timber sale activities cannot completely avoid cumulative landscape effects to subsistence uses. Therefore, while this project would not directly or indirectly impose a significant possibility of a significant restriction on subsistence resources or uses of deer, the alternatives would contribute to the cumulative effects on subsistence uses of deer at the forest level. This determination applies to all alternatives, including the no action alternative, and is based on an anticipated increase in human population, an associated increase in subsistence activities, and the capability of the habitat to produce deer.

### **Subsistence Determinations**

Section 810 (a)(3) of ANILCA requires that when a use, occupancy, or disposition of public lands may result in a significant possibility of a significant restriction, a determination must be made whether (1) such a restriction is necessary, consistent with sound management principles for the utilization of public lands, (2) the proposed activity involves the minimum amount of public lands necessary to accomplish the purposes of the use, and (3) reasonable steps will be taken to minimize adverse impacts on subsistence uses and resources resulting from the actions.

### **Necessary, Consistent with Sound Management of Public Land**

Alternatives have been examined to determine whether the associated potential restriction to subsistence use is necessary, consistent with the sound management of public lands. In this regard, the laws and direction that have been considered include:

- the National Forest Management Act of 1976 and its implementing regulations;
- the Alaska National Interest Lands Conservation Act (ANILCA) of 1980;
- the 1997 Forest Plan;
- the Tongass Timber Reform Act (TTRA) of 1990;
- the Alaska State Forest Practices Act;

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- the Alaska Coastal Management Program;
- the Multiple Use Sustained Yield Act (1960); and
- the USDA-FS Subsistence Management and Use Handbook (FSH 2609.25).

Management activities on National Forest System lands must provide for the multiple- use and sustained yield of renewable forest resources in accordance with the Multiple-Use Sustained Yield Act of 1960. Multiple-use is defined as “the management of all the various renewable surface resources of the National Forest System so that they are utilized in the combination that will best meet the needs of the American people (36 CFR 219.3). The alternatives presented in the Final EIS represent different ways of managing the resources of the project area in combinations that are intended to meet these needs. Each provides a different mix of resource uses and opportunities, and each has some potential to affect subsistence uses. Given the framework and emphasis of the Selected Alternative, the possibility of a restriction is necessary, consistent with sound management of public land.

ANILCA Title VIII places an emphasis on the maintenance of subsistence resources and lifestyles. However, the Act also provides for adequate opportunity for satisfaction of the economic and social needs of the State of Alaska and its people and recognizes that public lands are necessary and appropriate for more intensive uses. The Act also requires the Forest Service to make available 4.5 billion board feet of timber per decade from the Tongass National Forest. The TTRA removed the 4.5 billion board foot requirement, but directs the Forest Service to seek to meet market demand for timber to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, and subject to applicable law.

As described in Appendix A of this FEIS, the Selected Alternatives are necessary as a component of the timber management program designed to implement the Forest Plan and to meet TTRA direction. There is currently a market demand for timber, a limited timber supply from other sources, and an under-utilized mill capacity in the region. The volume from the Selected Alternative is a component of the 10-year timber sale schedule that attempts to provide timber to industry in an even-flow over the planning cycle. The timber volume for this project was also designed to be sold in multiple small sales over a period of several years in order to offer sales for smaller timber operators in the area. The Selected Alternative can help meet the Forest Plan and TTRA objectives, while also providing reasonable protection measures for forest resources, especially for subsistence. It is consistent with the Forest Plan, laws, regulations, policies, public needs, and the capabilities of the land.

Based on a review of the subsistence hearing testimony and the analysis conducted in the Final EIS, it is apparent that all of the alternatives may involve some potential impact to subsistence deer use in the future. Due to the cumulative effect of past, present and reasonably foreseeable actions, there is no alternative, including the Selected Alternative, that would meet Forest Plan and TTRA objectives and yet completely avoid a significant possibility of a subsistence restriction somewhere in the Tongass National Forest. I have determined that the actions involved in the implementation of the Selected Alternative are necessary, consistent with sound management of public lands, and strike the best balance between meeting the needs of the public and protecting the forest resources. This determination is based on the analysis of information presented in the FEIS and this ROD, and the guidance provided by the documents and laws listed above.

## **Amount of Land Necessary to Accomplish the Purpose of the Proposed Action**

The amount of public land involved to implement the Selected Alternative (considering sound multiple-use management of public lands) is the minimum necessary to accomplish the purpose of the Selected Alternative. Most of the Tongass National Forest is used by one or more rural communities for subsistence deer hunting purposes. It is not possible to lessen timber harvest in one area and concentrate it in another locale without impacting one or more rural communities' important subsistence use areas. In addition, harvestable populations of

subsistence wildlife species could not be maintained in a natural distribution across the forest if harvest were concentrated in specific areas. A well-distributed population of species is required by the National Forest Management Act and is one of the objectives of the Forest Plan.

The Forest Plan allocated many of the important subsistence use areas to LUDs that do not allow timber harvest. Other areas that are important to subsistence use were protected through standards and guidelines such as the 1,000-foot beach and estuary buffers and the stream-side Riparian Management Areas that do not allow timber harvest. Of the 72,780 acres of National Forest System lands within the Finger Mountain Project Area, the Forest Plan allocated 16 percent of the area to the non-development LUD of Old-growth Habitat Reserve, which does not allow timber harvest, and 84 percent to development LUDs such as Timber Production, Modified Landscape, and Scenic Viewshed. These designations provide for resource use and development for commodity resources such as timber. The minimum amount of land and roading was used to resolve resource concerns while meeting the purpose and need for this project in a practical and efficient manner.

Although habitat for deer has been reduced as a result of cumulative activities in the project area, results of deer pellet surveys conducted jointly by Alaska Department of Fish and Game (ADF&G) and the Forest Service suggest that deer numbers on Chichagof Island and in the vicinity of the Finger Mountain Project Area have remained stable since surveys began in 1981 (Kirchoff and White 2002). During the planning process, units proposed for harvest were selected and designed to preserve important wildlife habitats and the integrity of old-growth habitat, and to maintain habitat and connectivity. In addition, clearcut or even-aged management harvest units for the Selected Alternative differ from traditional clearcutting in that 10 to 35 percent of the timber in most units will be retained. Retained trees will most likely be in clumps or "islands" within a unit, or may be more evenly spaced. Although cover will still be removed, the actual openings created will be smaller than the unit size, and mature trees will remain as part of the unit. In addition, some alternatives propose 25 percent individual tree selection partial harvest. In these stands, canopy structure and understory vegetation will be maintained.

The greatest risk to meeting subsistence demand in the future is primarily related to the anticipated human population growth and its associated increase in subsistence hunter demand when compared to the habitat capability to produce deer. This anticipated population growth will happen independently of this proposed project.

Management activities cannot completely avoid all subsistence areas due to their location and broad extent across the Forest. Other areas that could be harvested may be limited by additional resource concerns such as soil and water protection, high-value wildlife habitat, economics, scenic quality, or unfeasible unit and road design. The impact of viable timber harvest projects usually includes the alteration of old-growth habitat, which reduces habitat capability for old-growth associated species.

The Finger Mountain Project involves the minimum amount of public land necessary and strikes a balance between meeting the needs of the public and protecting forest resources. Choosing any alternative (including the no-action alternative) or locating harvest in another location on Chichagof Island would not avoid or substantially lessen the risk to subsistence use in the future.

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## Reasonable Steps to Minimize Adverse Impacts Upon Subsistence Uses and Resources

The Forest Plan took considerable steps to minimize adverse impacts to subsistence uses and resources. Forest Plan standards and guidelines protect important deer winter habitat. Other reasonable steps taken to minimize adverse impacts to subsistence resources include:

- the overall Forest Plan land use designation strategy;
- the old-growth reserve strategy;
- travel and access management planning;
- Forest Plan standards and guidelines for stream, beach and estuary buffers; and
- the use of silvicultural systems that maintain components of overstory tree canopy, such as two-aged and uneven-aged management with reserve trees.

The Selected Alternative will construct approximately 21 miles of new roads. All new roads will be closed after completion of harvest and salvage operations. The Selected Alternative will maintain the current road density of 0.3 miles per square mile for the project area. Therefore, the current level of access to subsistence species will be maintained. For more information, see the Transportation Section in Chapter 3 of the FEIS.

Most of the high-value deer winter habitat that is available to be harvested is not proposed for timber harvest as part of the project. Approximately 3 percent of the high-value deer winter habitat would be harvested under the Selected Alternative.

The preferred alternative reflects a reasonable balance between the projected need for timber from the project area to help meet the Forest Plan, ANILCA, and TTRA timber-related objectives, and the continued protection of subsistence uses and resources. Impacts on subsistence have been minimized throughout the design of the individual harvest units and road corridors, and through the formulation of the alternatives. I have determined that reasonable measures to minimize impacts on subsistence have been adapted to the maximum extent practicable while still meeting the purpose and need for this project. Additional information can be found in the Forest Plan FEIS, Chapter 3, sections on Economic and Social Environment.

## Consumers, Civil Rights, Minorities and Women

No negative impacts to the civil rights of individuals or groups, including minorities and women, are anticipated to be associated with this project. Additional information can be found in the Forest Plan Final EIS Chapter 3 and Appendix H.

# Executive Orders

## Executive Order 11988 (Floodplains)

Executive Order 11988 directs Federal agencies to take action to avoid, to the extent possible, the long- and short-term adverse impacts associated with occupying and modifying floodplains. The numerous streams in the Finger Mountain Timber Sale(s) Project Area make it impossible to avoid all floodplains during timber harvest and road construction. The location of units chosen for the Selected Alternative and the application of BMPs combine to minimize adverse impacts on floodplains.

## Executive Order 11990 (Wetlands)

Executive Order 11990 requires Federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with destroying or modifying wetlands. The Selected Alternative avoids most identified wetlands; however, many small wetlands or muskegs occur within forested areas. These areas may be unavoidably altered by timber harvest or road construction; however, techniques and practices required by the Forest Service serve to maintain wetland attributes. The analysis displayed in the Final EIS indicates that there would only be minimal loss of wetlands with any of the alternatives. Soil moisture

regimes and vegetation on some wetlands may be altered in some cases; however, these altered acres would still be classified as wetlands and function as wetlands in this ecosystem. I have determined that the Selected Alternative includes all practicable measures to minimize harm to wetlands that may result from timber management activities.

### **Executive Order 12898 (Environmental Justice)**

Executive Order 12898 directs Federal agencies to identify and address the issue of environmental justice (i.e., human health and environmental effects of agency programs that disproportionately impact minority and low-income populations). The order specifically directs agencies to consider patterns of subsistence hunting and fishing when an agency action may affect fish or wildlife. The issue of environmental justice has been addressed through the Finger Mountain NEPA analysis in several ways. First, minority or low-income communities that may be affected by timber management activities were identified. Second, scoping and public involvement activities were structured to reach those communities. Third, the effects of the alternatives on such communities were evaluated. Finally, the analysis was documented in this EIS. I have determined that this project does not have disproportionately high and adverse human health or environmental effects on minority or low-income populations.

### **Executive Order 12962 (Recreational Fisheries)**

Executive Order 12962 directs Federal agencies, to the extent permitted by law and where practicable, to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities. Federal agencies are required to evaluate the effects of federally funded, permitted, or authorized actions on aquatic systems and recreational fisheries, and document those effects relative to the purpose of the order. Planning for the Finger Mountain Timber Sale(s) Project included documentation of existing recreational fisheries opportunities; protection of riparian water quality and fisheries habitats; and identification of fisheries enhancement opportunities. Harvest unit and road design are consistent with the standards and guidelines in the 1997 Forest Plan. I have determined that there will be no significant effect to recreational fisheries.

### **Coastal Zone Management Act**

The Coastal Zone Management Act of 1976 (as amended) excludes Federal lands from the Coastal Zone. However, the Act requires that when Federal agencies conduct activities or undertake development, these actions be consistent to the maximum extent practicable with the approved State Coastal Management Program.

The Alaska Coastal Management Plan incorporated the Alaska Forest Resources and Practices Act of 1979 (as revised) as the applied standards and guidelines for timber harvesting and processing. The Forest Service standards and guidelines and mitigation measures described in Chapter 2 of the Final EIS are fully consistent with the State standards. In a letter dated March 6, 2000, the State of Alaska concurred with the Draft EIS finding that described activities are consistent with the ACMP to the greatest extent possible.

Based on the analysis in the Final EIS, review of the Alaska Forest Practices Act, and comments from the State agencies on the Draft EIS, the Selected Alternative is consistent to the maximum extent practicable with the enforceable policies of the Alaska Coastal Management Plan.

# Federal and State Permits, Licenses, and Certificates

Prior to implementation of the proposed timber sale, various permits must be obtained from Federal and State agencies. Administrative actions on these permits will be initiated after the EIS is filed with the Environmental Protection Agency (EPA). The agencies and their responsibilities are listed below.

### **U.S. Army Corps of Engineers**

- Approval of discharge of dredged or fill material into waters of the United States (Section 404 of the Clean Water Act of 1977, as amended)
- Approval of discharge of dredged or fill material into waters of the United States (Section 404 of the Clean Water Act of 1977, as amended)

### **U.S. Coast Guard**

- Coast Guard Bridge Permit (in accordance with the General Bridge Act of 1946) required for all structures constructed across navigable waters of the U.S.

### **U.S. Environmental Protection Agency**

- Storm water discharge permit
- National Pollutant Discharge Elimination System review (Section 402 of the Clean Water Act)

### **State of Alaska, Department of Environmental Conservation**

- Certification of compliance with Alaska Water Quality Standards (Section 401 Certification)
- Solid Waste Disposal Permit (Section 402 of the Clean Water Act)

### **State of Alaska, Department of Natural Resources**

- Authorization for occupancy and use of tidelands and submerged lands

# Additional Applicable Policy and Legislation

### **The Roadless Area Conservation Rule and the Transportation Policy**

The Roadless Area Conservation Final Rule (Roadless Rule) was signed by the Secretary of Agriculture on January 12, 2001. This rule generally established prohibitions on road construction, road reconstruction, and timber harvest in inventoried roadless areas on National Forest System lands. The Finger Mountain Project meets the transition criteria included in the Roadless Rule, which allows projects on the Tongass National Forest to continue if the Notice of Availability for their Draft Environmental Impact Statement was published in the Federal Register prior to January 12, 2001. A Notice of Availability for the Draft Environmental Impact Statement for the Finger Mountain Timber Sale(s) Project was issued in January 2000.

Currently the Roadless Area Conservation Rule (Roadless Rule, January 12, 2001) is in effect and is the subject of a number of lawsuits. The Department of Agriculture and the Department of Justice have entered into an agreement with the state of Alaska (signed 6/10/03) settling the state's lawsuit challenging the applicability of the Roadless Rule in Alaska. The Department of Agriculture committed to publishing for comment a proposed

amendment to the Roadless Rule that excludes the Tongass National Forest. Publication of this proposed amendment is scheduled for the end of June 2003 and includes a public comment period. The Department made no representation regarding the content or substance of any final amendment to the Roadless Rule that may result.

## Implementation of this Decision

Implementation of this decision may occur no sooner than 50 days from the date of publication of the notice of this decision in the *Juneau Empire*, the official newspaper of record, if no appeal is received.

This project will be implemented in two or more independent timber sales in accordance with Forest Service Manual and Handbook direction for Timber Sale Project Implementation, contained in FSM 2430 and FSH 2409.24. This direction provides a bridge between project planning and implementation; will ensure execution of the actions, environmental standards, and mitigations approved by this decision; and will ensure compliance with TTRA and other applicable laws.

Implementation of all activities authorized by this ROD will be monitored to ensure that they are carried out as planned and described in the Final EIS, ROD, and planned unit and road cards, unless they are modified consistent with direction in FSM 2430 and FSH 2409.24.

Appendices B and C in the Final EIS contain the planned road and unit cards. These cards are an integral part of this decision because they summarize the specific resource concerns, management objectives, and mitigation measures to govern the layout of the harvest units and the general location and construction of roads. The road and unit cards, along with the integrated silviculture prescriptions, will be used during the implementation process. Their use will ensure that all aspects of the project are implemented within applicable standards and guidelines and that resource impacts will not be greater than those described in the EIS. Similar cards will be used to document any changes to the planned layout as the actual layout and harvest of the units occurs. The implementation record for this project will display each harvest unit, transportation facility, and other project components as actually implemented. It will also include any proposed changes to the design, location, standards and guidelines, or other mitigation measures for the project; and the decisions on the proposed changes.

Proposed changes to the authorized project actions will be subject to the requirements of NEPA, NFMA, Section 810 of ANILCA, TTRA, CZMA, and other laws concerning such changes. In determining whether and what kind of NEPA action is required, I will consider the criteria for whether to supplement an existing EIS in 40 CFR 1502.9(c) and FSH 1909.15, section 18. In particular, I will consider whether the proposed change is a substantial change to the Selected Alternative as planned and already approved, and whether the change is relevant to environmental concerns. Connected or interrelated proposed changes regarding particular areas or specific activities will be considered together in making this determination. The cumulative impacts of these changes will also be considered.

The intent of field verification is to confirm inventory data and to determine the feasibility and general design and location of a unit or road, not to locate the final boundaries or road locations. Minor changes are expected during implementation to better meet on-site resource management and protection objectives. Minor adjustments to unit boundaries are also likely during final layout for the purpose of improving logging systems efficiency. This will usually entail adjusting the boundary to coincide with logical logging setting boundaries. Many of these minor changes will not present sufficient potential impacts to require any specific documentation or action to comply with applicable laws. Some minor changes may still require appropriate analysis and documentation to comply with FSH 1909.15, section 18.

## Right to Appeal

This decision is subject to administrative review (appeal) pursuant to 36 CFR part 215. A written notice of appeal must be filed with the Appeal Deciding Officer:

Regional Forester  
USDA Forest Service, Region 10  
P.O. Box 021628  
Juneau, AK 99802-1628

The Notice of Appeal must be filed within forty-five (45) days of publication of the notice of this decision in the *Juneau Empire*.

In accordance with 36 CFR part 215.14, it is the responsibility of those who appeal a decision to provide the Appeal Decision Officer sufficient evidence and rationale to show why the Responsible Official's decision should be remanded or reversed. The written notice of appeal filed must:

1. state that the document is a Notice of Appeal filed pursuant to 36 CFR part 215,
2. list the name, address, and telephone number of appellant,
3. identify the decision document by title and subject, date of the decision, and name and title of the Responsible Official,
4. identify the specific change(s) in the decision that the appellant seeks or portion of the decision to which the appellant objects, and
5. state how the Responsible Official's decision fails to consider comments previously provided, either before or during the comment period specified in 36 CFR 215.6 and, if applicable, how the appellant believes the decision violates law, regulation, or policy.

The first independent timber sale is planned to be made available as part of the current timber supply in the year 2004. If no appeal is received, implementation of this action can begin five (5) business days from the close of the 45-day appeal filing period.

### Contact Person

For additional information concerning the specific activities authorized with this decision, contact the Finger Mountain Sale(s) Planning Team:

Richard M. Abt  
Finger Mountain Timber Sale(s) Planning Team  
Sitka Ranger District, Tongass National Forest  
204 Siginaka Way  
Sitka, AK 99835  
(907) 747- 4226

  
THOMAS PUCHLERZ  
Forest Supervisor

6-20-03  
Date

## Exhibit A

### Harvest Units Specific to the Selected Alternative

**Finger Mountain Timber Sale**  
**Selected Alternative**  
**Unit Summary Table**

VCU <sup>1</sup>	Unit #	Total Unit Acres	Harvested Acres	Harvested Volume (MBF)	Available Volume Harvested <sup>2</sup>	Yarding System	Silvicultural Prescription	Management System <sup>3</sup>
230	1520	6	6	66	100%	cable	clearcut	even-aged
230	1521	4	4	56	100%	cable	clearcut	even-aged
230	1522	7	7	88	100%	cable	clearcut	even-aged
230	1540	27	23	297	86%	cable	clearcut w/res	even-aged
230	1550	23	23	383	100%	cable	clearcut	even-aged
230	1552	10	10	144	100%	cable	clearcut	even-aged
230	1590A	29	29	677	100%	cable	clearcut	even-aged
230	1590B	36	35	721	97%	cable	clearcut w/res	even-aged
230	1593B	32	31	612	99%	cable	clearcut	even-aged
230	1620	26	22	829	85%	cable	clearcut w/res	even-aged
230	1650	67	65	1392	96%	cable	clearcut w/res	even-aged
230	1660	17	17	375	99%	cable	clearcut	even-aged
230	1670	22	21	431	93%	cable	clearcut w/res	even-aged
230	1720	24	23	437	93%	cable	clearcut w/res	even-aged
230	1730	5	4	150	84%	cable	clearcut w/res	even-aged
230	1731	12	11	322	83%	cable	clearcut w/res	two-aged
230	1750A	7	6	153	64%	cable	overstory removal	two-aged
230	1750B	19	18	444	96%	cable	clearcut w/res	even-aged
230	1770	38	37	834	97%	cable	clearcut w/res	even-aged
230	1780	18	17	387	94%	cable	clearcut w/res	even-aged
234	1810	32	27	414	78%	cable	clearcut w/res	even-aged (63%) two-aged (37%)
234	1811	26	18	416	70%	cable	clearcut w/res	even-aged
234	1820	55	55	1547	93%	cable	clearcut w/res	even-aged (34%) two-aged (66%)
234	1830	26	18	230	69%	cable	clearcut w/res	even-aged (70%) two-aged (30%)
234	1850	53	48	1488	87%	cable	clearcut w/res	even-aged (46%) two-aged (54%)
234	1852	25	25	599	100%	cable	clearcut	even-aged
234	1853	39	38	1100	93%	cable	clearcut w/res	even-aged (70%) two-aged (30%)
233	1973	36	31	485	85%	cable	clearcut w/res	even-aged
233	1976	30	27	517	89%	cable	clearcut w/res	even-aged
233	1977	22	20	445	92%	cable	clearcut w/res	even-aged
233	1980	59	53	722	63%	cable	clearcut w/res	even-aged
233	1981	53	48	1392	81%	cable	clearcut w/res	even-aged
233	1992	41	40	899	93%	cable	clearcut w/res	even-aged
233	2030	21	20	462	95%	cable	clearcut w/res	even-aged
233	2040A	10	10	181	52%	cable	clearcut w/res	two-aged
233	2040B	70	49	1713	69%	cable	clearcut w/res	even-aged
<b>Total</b>		<b>1,027</b>	<b>936</b>	<b>21,408</b>				

<sup>1</sup> Unit Cards are located in Appendix B of the Finger Mountain Timber Sale(s) FEIS.

<sup>2</sup> Available Volume Harvested = Total Unit Volume divided by Harvest Volume (Total Unit Volume data is found in the Unit Cards in the FEIS).

<sup>3</sup> For units in which more than one management system is prescribed, this column displays the proportion of land on which each system will be applied.

## Exhibit B

### Road Management Objectives (RMOs)

## Road Management Objectives

### Road Management Definitions and Terminology used in RMO Summary Tables

#### Road Status

- **E:** Existing road
- **E(R):** Existing road, scheduled for reconstruction
- **P:** Proposed for construction

**Service Life** (The length of time a facility is expected to provide a specified service.)

- **Long-term:** Service life of at least ten years
- **Intermittent:** Operated for periodic service, and closed for more than one year between periods of use

**Service Level** (Based on significant traffic characteristics and operating conditions for a road. Reflects factors such as speed, travel time, traffic interruptions, freedom to maneuver, safety, driver comfort, convenience, and operating costs.)

- **C:** Traffic flow is slowed by road condition. Traffic volumes are frequently controlled as the capacity is reached. Accommodates mixed traffic (all vehicle types). Meets minimum safety requirements. Topographic features generally dictate alignment. Travel efficiency is traded for lower construction costs. Road surface may not be stable under all traffic or weather conditions during the normal use season.
- **D:** Traffic flow is slow or may be blocked by an activity. Traffic volumes are intermittent and usually controlled; volume is limited to that associated with the single purpose (e.g., timber harvest). Not designed for mixed traffic. Need for safety protection is minimized by slow speeds and strict traffic controls. Alignment is dictated by topography. Road surface is rough and irregular.

**Functional Classification** (The way in which a road services land and resource management needs and the character of service it provides.)

- **A:** Arterial road. Provides service to large land areas and usually connects with other arterial roads or public highways. (Due to the remoteness of the Finger Mountain Timber Sale(s) Project Area, and the fact that the road systems planned for the area are small and not interconnected, no roads are classified as arterials.)
- **C:** Collector road. Serves smaller land areas than an arterial road. Usually connects arterial roads to local roads or terminal facilities.
- **L:** Local road. Connects terminal facilities with other local, collector, or arterial roads, and public highways. Usually local roads are for a single purpose, such as timber harvest.

**Post-harvest Maintenance Level** (Defines the level of service provided by, and maintenance required for, a specific road after harvest.)

- **Level 1:** Normally assigned to intermittent service roads during the time they are closed to vehicular traffic. In the Finger Mountain Timber Sale(s) RMO summary tables, this level also applies to short-term roads after the purpose for which they were constructed is completed. At this level, drainage structures are removed, the roadbed is waterbarred, and basic custodial maintenance is performed to keep damage to adjacent resources at an acceptable level and to perpetuate the road to facilitate future management activities.
- **Level 2:** Assigned to roads needed by high clearance vehicles between periods of harvest. Planned post-harvest vehicle traffic in the Finger Mountain Timber Sale(s) Project Area is expected to be either high clearance vehicles (HCV) or all-terrain vehicles (ATV), to

accomplish administrative and recreation access objectives. Roads will be logged out and brushed as necessary to provide passage for ATVs. The road prism will be maintained to provide for passage of high clearance vehicles. Barricades will be placed at the entrance of each road maintained at this level, for ATV access, to effectively block vehicles greater than 50" in width.

**Maintenance Strategies** (The maintenance criteria include a discussion of how the road is to be maintained following one of these three strategies.)

- **Active:** Provide frequent cleanout of ditches and catchbasins to assure controlled drainage. Control roadside brush to maintain sight distance. Grade as needed to maintain crown and running surface.
- **Storm Proof:** Provide waterbars, rolling dips, outsloping, etc., to assure controlled runoff until any needed maintenance can be performed on the primary drainage system. Control roadside brush to maintain passage.
- **Storage:** Remove or bypass all drainage structures to restore natural drainage patterns; add water-bars as needed to control runoff; and re-vegetate.

#### **Post Harvest Access Needs and Traffic Strategies:**

**1) Future Commercial Timber Volume** (Is there additional timber that this road accesses for which it will be needed in the future?)

- **Yes:** Additional timber exists for which this road will be needed in the future.
- **No:** No additional timber exists for which this road will be needed in the future.

**2) Silviculture/Administration** (Access needed to perform administration or post-sale silviculture practices, and method of access.)

- **HCV:** High clearance vehicle; pickup-type 4-wheel drive.
- **ATV:** All terrain vehicle, smaller 4-wheel or motorcycle.

**3) Post-harvest Public/Recreation Traffic Strategies** (Describes methods employed on forest development roads to control traffic. Used to prevent damage to the roadway, to abate unsafe traffic conditions, or to control use to meet other specific management direction such as protecting wildlife habitat or achieving semi-primitive recreation objectives.)

- **Encourage:** Encourage public use by means of appropriate signing, public notification, and active maintenance of the road prism.
- **Accept:** Public use is allowed but not encouraged, while road is maintained for administrative access.
- **Discourage:** Public access is discouraged by means of allowing alder growth at road entrance, non-removal of blowdown, or road prism deterioration within acceptable environmental limits. Road may also be signed to discourage use. Example: "Not Maintained for Public Traffic."
- **Eliminate:** Road is physically blocked after sale traffic. Where prescribed for long-term intermittent roads, this strategy is achieved by means of placement of impassable barricades at road entrances. On short-term roads, removal of drainage structures effectively blocks traffic.
- **Prohibit:** Public access is prohibited by a road order (i.e., CFR closure). Implementation of this strategy on remote road systems may require the installation of gates, in addition to public notification and appropriate signing.

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**Post-harvest Resource Concerns** (Specific road management concerns noted by resource specialists during planning process. See Road Cards in Appendix E of the Final EIS, for mitigation measures related to concerns.)

- Hydrology/Soils
- Wildlife
- Subsistence
- Fish and fish habitat

**Finger Mountain Timber Sale**  
**Selected Alternative**  
**Roads Summary Table**

VCU NUMBER <sup>1</sup>	ROAD NUMBER	ROAD	ROAD STATUS	SERVICE LIFE	SERVICE LEVEL	FUNCTION CLASS	MAINT. LEVEL	POST-HARVEST ACCESS NEEDS/TRAFFIC STRATEGIES			POST-HARVEST RESOURCE CONCERN(S) (SEE ROAD CARDS)		
								FUTURE COMM'L. VOL.	SILVIC/ ADMIN.	PUBLIC/ RECREATION	HYDRO/ SOILS	W/L	SUBSISTENCE
230	7561	0.59	E	INTERMITTENT	D	L	2	YES		DISCOURAGE	X		X
230	75619	0.07	E	INTERMITTENT	D	L	2	YES		HCV	DISCOURAGE		
230	7568	1.91	E	INTERMITTENT	D	C	2	YES		HCV	DISCOURAGE	X	
230	75619	0.90	P	INTERMITTENT	D	L	2	YES		HCV	DISCOURAGE	X	
230	7605	2.28	P	INTERMITTENT	D	L	2	YES		HCV	DISCOURAGE	X	
230	7605	4.01	P	INTERMITTENT	D	L	1			ELIMINATE	X		X
230	76054	0.63	P	INTERMITTENT	D	L	1			ELIMINATE	X		
233	7560	3.80	E	INTERMITTENT	D	C	2	YES		HCV	DISCOURAGE		
233	75602	0.31	E	INTERMITTENT	D	L	1			ELIMINATE	X		
233	75602	0.54	P	INTERMITTENT	D	L	1			ELIMINATE	X		
233	75603	0.36	E	INTERMITTENT	D	C	2	YES		HCV	DISCOURAGE		
233	75605	0.34	E	INTERMITTENT	D	L	1			ELIMINATE	X		
233	75607	1.41	P	INTERMITTENT	D	L	1	YES		HCV	DISCOURAGE		
233	7566	0.63	E	INTERMITTENT	D	L	1	YES		ATV	ELIMINATE	X	
234	7560	1.52	E	INTERMITTENT	D	C	2	YES		HCV	DISCOURAGE		
234	7565	1.57	E	INTERMITTENT	D	L	2	YES		HCV	DISCOURAGE	X	
234	75651	0.93	E	INTERMITTENT	D	L	1			ELIMINATE	X		
234	75653	0.13	E	INTERMITTENT	D	L	1			DISCOURAGE			
Total miles Classified		21.93											

<sup>1</sup> Road cards are included in Appendix C of the Finger Mountain Timber Sale(s) FEIS.

## Exhibit C

### **South Chichagof Island Roads Analysis Area Determination**

# **South Chichagof Island Roads Analysis Area Summary**

## **Finger Mountain Project Area**

### **Introduction**

The Forest Service Transportation Policy (FSM 7700, January 12, 2001) establishes requirements for roads analysis when planning to construct, reconstruct, or close roads on National Forest System lands. The Tongass National Forest has prepared the Finger Mountain Timber Sale(s) Environmental Impact Statement to be consistent with the Forest Service Transportation Final Administrative Policy (Roads Rule). A forest-scale Road Analysis Process (RAP) for the Tongass was completed in January of 2003. The Forest Supervisor determined that no Forest Plan amendment or revision was needed and the forest-scale RAP was incorporated into the Forest Plan. This RAP has been prepared at the area scale and supplements the results of the January 2003 Forest-scale RAP. This road analysis process is located in the Finger Mountain Timber Sales planning record at the Sitka Ranger District.

The following is a summary from the South Chichagof Island Roads Analysis completed in January 2002 and available in the project records at the Sitka Ranger District.

### **Area and Road System Description**

The South Chichagof Island Roads Analysis Area (SCIRAA) is a logical portion of the Forest to analyze transportation system needs. This portion of the island is approximately 698,260 acres, or 1,091 square miles in size. There is no road access to the island from either the mainland or other islands in southeast Alaska. Access to this area is only by private boats or floatplanes.

There are no cities or communities located within the analysis boundary. There are two previously used logging camp locations within the boundary and the Forest Service has seasonal work centers located at both locations. The Corner Bay Administrative site is located five miles south and across Tenakee Inlet from the community of Tenakee Springs. The False Island work center is located on the north shore of Peril Straits. There are no roads connecting any of the roads systems in the SCIRAA to any communities in southeast Alaska.

There are 158.5 miles of National Forest System roads in the SCIRAA, of which, approximately 84 miles are open and drivable for either standard passenger vehicles or 4-wheel drive vehicles. The remaining National Forest System roads are closed to vehicle traffic (in storage) through drainage structure removal and/or alder growth across the roadway. There is an additional 18.9 miles of road within the SCIRAA on non-National Forest lands.

### **Forest Plan Objectives**

The road system within the SCIRAA supports the goals and objectives of the Forest Plan. The main transportation goal is to develop and manage a road system that supports resource activities based on long-term management. The objectives are to provide access, and manage and maintain roads to protect water, soil, fish and wildlife resources.

### **Land Use Designations (LUDs)**

The Tongass National Forest Land and Resource Management Plan was revised in 1997. As part of this revision, management prescriptions or land use designations were assigned to various areas. These Forest Plan LUDs determine development and non-development uses. Development LUDs allow activities such as timber harvest and road construction. These

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activities are mostly incompatible within the non-development LUD classifications. The Forest Plan LUDs for the SCIRAA are described in the Forest Plan are shown in Table 1.

**Table 1 - South Chichagof Island LUDs**

Land Use Designation	Acres	Miles of roads within the LUD
Wilderness	204,480	0
Old Growth Habitat	56,069	3.39
Semi-Remote Recreation	756	0
Scenic Viewshed	17,133	19.83
Modified Landscape	8,914	13.84
Timber Production	268,123	115.85
Legislated LUD II	120,688	5.32
LUD II Research Natural Areas	9,790	0
LUD II Wild Rivers	2,693	0.26
<b>Subtotal</b>	<b>688,646</b>	<b>158.49<sup>1</sup></b>
Non-National Forest Land	9,614	18.87
<b>Total</b>	<b>698,260</b>	<b>177.36</b>

<sup>1</sup> This value represents the total miles of National Forest System Roads in the SCIRAA.

## **Inventoried Roadless Areas**

Most of the National Forest System roads were constructed in support of timber harvest in order to transport logs to saltwater for rafting to mills. The Forest Plan included an inventory of roadless areas on the Tongass National Forest that were identified during the Roadless Area Review and Evaluation done in the 1970s (RARE II). Of the 110 Inventoried Roadless Areas (IRAs) described in the Forest Plan FEIS, Appendix C, four of these areas are located within the SCIRAA: Chichagof (#311), Trap Bay (#312), Point Craven (#314), and Hoonah Sound (#328). In addition to these four roadless areas, there are four other un-roaded areas within the SCIRAA that are smaller than 5,000 acres that were identified in the Forest Plan. These smaller areas are not contiguous with the Inventoried Roadless Areas.

## **Road Management**

Currently there is limited use of the roads in the SCIRAA by the general public. This is due to the distance from the population centers and high costs of transporting vehicles to the road headings. These road headings consist of former or existing log transfer facilities (LTF) sites. Recent road maintenance budgets have not been adequate to maintain all of the open roads on the Sitka Ranger District. Decreasing timber production has also brought a reduction in sharing of road maintenance costs between the Forest Service and timber purchasers. Therefore, it is increasingly important to prioritize which roads are necessary for ongoing administrative duties and for public use. Other roads can be put into storage by removing drainage structures. These roads can be reopened when future resource needs are identified.

For the most part, the public values the isolated road system for recreation and access for subsistence use. Roads that are accessible from communities are considered acceptable, but roads on isolated islands such as Chichagof where access is expensive are viewed as unsuitable management. Roads that are not maintained to their standards are seen as the failure of the Forest Service to take care of the people's property.

Some commercial fishermen feel that roads, especially those that have not been maintained, negatively impact their livelihood by potentially degrading fish habitat with sedimentation and fish passage concerns through road drainage structures.

Unroaded areas of Chichagof Island are perceived to be far more important for intrinsic values than social and economic values. This is often referred to as passive-use value, which is the value of knowing a resource exists, even if a person never intends to use or visit it. Large portions of the analysis area are Congressionally designated Wilderness Areas or LUD II, which provide for solitude and primitive recreation with no motorized access except by water.

Allowing roads to close naturally while leaving drainage structures in place has created the potential for erosion and subsequent water quality concerns downstream. In part due to the increased awareness of the potential effects of roads on water quality, the natural closure method for roads has been revised to include drainage structure removal and the addition of water bars to aid in controlled runoff. This is being accomplished using the Road Condition Surveys (RCS) that were completed in 2001 for the Finger Mountain Project Area. In the future, planned road closures on newly constructed roads will immediately follow timber harvest unless there is a compelling reason to keep them open on a short-term basis, such as thinning and further reforestation efforts. The closures will most often involve removal of all drainage structures, including culverts and bridges, with the addition of strategically placed water bars impassable to motor vehicles. Foot traffic on roads closed to vehicles will continue to be allowed. Once these roads are physically closed and placed in storage, road maintenance funding can be better used on the remaining open roads.

A Road Management Objective (RMO) is used to describe, identify, and categorize the level of intended use. The RMO includes general design criteria, maintenance criteria, and operation criteria plus a narrative that explains the route and what uses the road provides. During an environmental analysis, the interdisciplinary team proposes an RMO based on resource concerns and opportunities, and public comments. This RMO is then approved by the District Ranger. RMOs are dynamic and can be updated as use, resources, or funding changes. All current RMOs are available to the public and are maintained at the Sitka Ranger District office in Sitka, Alaska. The RMOs for the Finger Mountain area are contained in Appendix C of the Finger Mountain Project Final Environmental Impact Statement.

### **Classified Roads in the SCIRAA**

Roads on National Forest System lands that have been determined necessary for long-term motor vehicle access are referred to as classified roads. These roads are managed or maintained under Forest Service jurisdiction and are further defined by the amount and type of maintenance they will need to provide that access. The SCIRAA currently has 158.5 miles of classified roads.

Through this analysis, differences were noted between what the road-specific RMOs state and what is actually happening on the ground. These include differences in maintenance levels, traffic usage, open or closed status, and, in some instances, continued use of unclassified roads. The process of implementing some of these changes will require different levels of NEPA analysis. The Finger Mountain Timber Sale(s) EIS will specifically address the Inbetween and Crab Bay road systems with the goal of reducing the proposed open road miles to achieve the minimum road system needed for future resource management.

Through the upcoming EISs for Corner Bay, False Island, and Ushk Bay, the road systems for each of these analysis areas will be evaluated to provide for the minimum road systems needed to facilitate the proposed and future management of these areas.

### **Current open roads in the SCIRAA**

Forest roads in the SCIRAA that are open to vehicular traffic fall into two categories: those open to high clearance vehicles such as pick-up trucks or 4-wheel drive trucks (Objective Maintenance Level [OML] 2) and those open and maintained for standard passenger vehicles (OML 3). There are approximately 84 miles of these roads open for high-clearance or

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passenger car traffic and they are maintained at OMLs of 2 or 3. All the open roads receive periodic roadside brushing and annual drainage structure maintenance.

## **Current closed roads in the SCIRAA**

Roads that are closed and deemed needed for future resource or administrative activities are placed in OML 1. The remaining 74.5 miles of classified roads in the project area are closed to public vehicular traffic and are maintained at an OML of 1. The effect of closing certain roads and placing them in this “storage” condition allows the road to be maintained in a condition that is readily available when needed. Storage means removing or bypassing all drainage structures on the road to restore natural drainage patterns, adding water-bars as need to control run-off, and re-vegetating the roadways in places.

## **Unclassified Roads in the SCIRAA**

The SCIRAA also contains 56.2 miles of existing unclassified roads. These roads on National Forest System lands are not managed as part of the forest transportation system. They consist of unplanned roads, former temporary roads, off-road vehicle tracks, and those roads that were once under permit or other authorization and were not decommissioned upon the termination of the authorization. It was determined that these roads were not needed for future management activities; therefore, they were not managed as part of the forest transportation system. The recent Interim Directive No. 7710-2001-3, 12/14/2001, states that all classified roads as well as the unclassified roads will be catalogued in the Forest Transportation Atlas.

## **Roads and Fish Passage**

When roads are to be constructed over fish bearing streams, fish passage through the drainage structures is a key element in design. Culverts in smaller streams can impede fish passage if they constrict the channel width and subsequently increase stream flow velocity; are installed on too steep of a gradient; are blocked at either end with debris; or create a waterfall at the outlet.

Fish presence in streams is classified as either *anadromous* (salmonids and steelhead trout) in Class I streams or as *resident* (Dolly Varden, cutthroat trout, sculpins, etc.) in Class II streams. Road Condition Surveys (RCS) have been conducted which include the use of both minnow trapping and electroshock treatments to identify the presence and species of fish. The drainage structure information gathered includes whether fish passage is being maintained, the amount of fish stream habitat present upstream of the road crossing, and the locations of natural barriers to fish migration.

The data from the RCS was reviewed in the office as well as in the field to verify potential fish passage problems. Problems associated with fish passage ranged from steep culvert gradients to the presence of waterfalls (perched) at pipe outlets. Insufficient fish passage is present within SCIRAA at 92 locations. Thirty of these crossings are located on Class I streams, and sixty-two are located on Class II streams. The barriers were found to be more prevalent in the smaller diameter pipes as was determined with the introduction of electroshock sampling methods in streams that were so small that fish presence was not previously identified.

Several construction projects have been planned on the district for 2002 and 2003 to rectify identified fish passage barrier problems. These projects may include replacing smaller pipes with larger ones and/or reinstalling and flattening the gradients of existing structures. The goal is to eliminate all barriers to fish migration caused by forest road drainage structures on the Sitka Ranger District and across the Tongass National Forest.

## **Bridges**

Bridges are the best structure to use for crossing over fish streams. While steel bridges are preferred because they last as long as 50 years if maintained well, the majority of bridges

built to facilitate timber harvest utilized log stringers. Unfortunately, log stringer bridges have a much shorter and varying life span, depending on the size and species of individual logs used in construction. Numerous log stringer bridges in the SCIRAA have failed and been replaced; however, there are many more stream crossings utilizing log stringer bridges that are in jeopardy. Annual bridge surveys determine each bridge's competency to support vehicular traffic. The removal of log stringer bridges on closed roads is recommended to eliminate concerns about fish habitat and public safety. There are currently 28 log stringer bridges in the SCIRAA. Seven are located in the Finger Mountain Project Area.

### **Public Participation, RAPs, and Access and Travel Management**

In 2000, the Sitka Ranger District initiated a public-oriented planning effort, Access and Travel Management (ATM), intended to evaluate road management objectives and better understand public needs. This mid-level analysis was intended to generate site-specific recommendations for incorporation into future National Environmental Policy Act (NEPA) project level planning. The information gathered from these public meetings was also incorporated in this analysis.

Through the District planning effort, two public meetings were hosted to obtain public input and share information about access and travel management. The meetings were held in Tenakee Springs and Sitka. The recommendations from the Tenakee meeting have been evaluated and will be addressed in the upcoming Finger Mountain, Corner Bay, and False Island NEPA projects. No public concerns were raised regarding roads in the SCIRAA during the meeting in Sitka.

### **Minimum Road System**

The minimum road system, as stated in 36 CFR Part 212.5(b)(1), is the road system determined necessary to meet resource and other management objectives adopted in the relevant land and resource management plan (e.g., second growth management), to meet applicable statutory and regulatory requirements, and to reflect long-term funding expectations. Roads not needed for the minimum road system should be decommissioned.

The Forest Plan has designated a large portion of the SCIRAA as Timber Production. Since there are currently 12 unroaded VCUs within the SCIRAA that are located in the Timber Production LUD, the minimum road system for the SCIRAA is not in place. The implementation of the road opportunities displayed in the SCIRRA on Map 9, Roading Opportunities, would provide access to meet the timber management objectives of the Forest Plan (a copy of the SCIRAA is included in the Finger Mountain Timber Sale(s) Planning Record). The additions of road access into these currently unroaded areas would also provide public access for recreation and subsistence activities.

At times during timber harvest activities, some of the roads shown as closed (in storage) may be opened for use. Also, special use permittees, timber purchasers, and cooperators may require the use of new constructed roads, both classified and temporary, in addition to the roads shown on the map. Upon termination of the contracts and/or permits allowing such use, temporary roads will be decommissioned and returned to a natural state, and will not become part of the long-term transportation system. The need for classified roads will be analyzed as part of the environmental documentation and include public involvement. Some future roads may be built and left open, and some currently maintained open roads may be proposed for closure depending on the results of those analyses.

### **Summary**

The Road Analysis Process is part of the national effort to better manage forest roads. The aim of the analysis is to describe the existing road system and recommend appropriate changes or adjustments to develop a road system that is safe and responsive to public needs and desires, is affordable and efficiently managed, has minimal negative ecological effects on the land, and is in balance with available funding for needed management actions.

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Road condition surveys are invaluable in providing visual displays of items such as the location of log stringer bridges, culverts, slide areas, locations of rock pits, ditches that need cleaning, and areas where brush, usually alder, is encroaching onto the roadway. Updating these road condition surveys as corrective measures are accomplished (i.e., monitoring) will be necessary to maintain the current status of the road systems and will assist in prioritizing future maintenance activities.

The Sitka Ranger District will need to further evaluate the current number of open roads within the SCIRAA and determine which roads, or segments of roads, need to be converted to maintenance level 1 (closed to public traffic) or decommissioned and taken off the Transportation Atlas. This is needed to balance the current available funding for road maintenance with future anticipated management actions.

The isolated nature of the SCIRAA from current centers of population restricts the opportunities for other funding sources such as the Alaska Forest Highway program or the Federal Highway Administration. It is not likely there would be any opportunity for Public Forest Service Roads programs dollars as roads qualifying for this level of funding are prioritized based on public need. Since the SCIRAA is not located near a population center, none of the roads within the area would likely ever rate out as a high priority.

Because of limited road maintenance funding, the addition of new “open roads” within the SCIRAA should be evaluated based on anticipated recurring resource and management needs, and on a project-by-project basis. The long-term goal should be providing the minimum open road system that is affordable to maintain on the forest.

Opportunities for other projects include:

- decommissioning the identified former temporary roads that were not closed to traffic after completion of their intended use,
- continuing to repair or replace the “red pipe” fish barriers,
- re-evaluating the long-term access needs to areas by roads that utilize aging log stringer bridges for removal or replacement,
- re-evaluating the current Road Management Objectives (RMOs) for the SCIRAA; identifying those roads or road segments that might be better served being placed in a different maintenance level; using every opportunity to convert open roads to closed roads,
- as per Interim Directive No. 7710-2001-3, 12/14/2001, which states that all classified roads as well as the unclassified roads will be cataloged in the Forest Transportation Atlas, determining at the District level whether road condition surveys were performed on all of the unclassified roads and, if not, making the needed provisions to complete the inventory, and
- as additional resource opportunities in the timber LUDs within the SCIRAA arise, utilizing the Roading Opportunities map as a starting point as the routes displayed were previously ground verified.

## Current Planning Efforts

There are three Forest Service projects that involve timber harvest and road construction currently in the planning stages of environmental analysis within the SCIRAA. There has been intensive road-related analysis in support of these planning efforts. The 72,780 acre

Finger Mountain Project Area is located near the middle of Chichagof Island and is surrounded by the 271,532 acre Chichagof Inventoried Roadless Area (#311). The False Island Timber Sale(s) and the Corner Bay Timber Sale(s) NEPA projects are identified and currently listed on the Tongass 10 year timber sale plan. Other areas that have a land use designation where timber harvest is allowed as determined by the Forest Plan may be added in the future. The National Forest System lands with development LUDs may have road construction in the reasonably foreseeable future in the SCIRAA.

## **Finger Mountain Project Area**

### **Roadless within Finger Mountain Project Area**

Portions of the Finger Mountain Project Area are also within Chichagof Inventoried Roadless Area (#311). This includes portions allocated to Timber Production LUDs. There are 160 acres of timber harvest and 1.6 miles of planned road construction within the Timber Production LUD that fall within the Inventoried Roadless Area #311.

### **Classified Roads in the Finger Mountain Project Area**

Forest roads that are open to vehicle traffic are in two categories; those maintained for standard passenger vehicles (Maintenance Level III), and those that are maintained to be drivable only for high clearance vehicles such as pickup trucks (Maintenance Level II). There are no proposed Maintenance Level III roads in the Finger Mountain Project Area. All of the open classified road miles would receive periodic roadside brushing to maintain driving sight distance and annual drainage structure maintenance.

Exhibit B of the Finger Mountain ROD displays all classified roads within the Project Area and their respective RMOs or desired future conditions. New roads constructed in this project area will have either a crushed rock or shot rock surface and open to high clearance vehicles (Maintenance Level II) or placed in storage and closed to traffic (Maintenance Level I). There are no Maintenance Level III roads in the project area.

### **Minimum Road System**

The new Forest Service Transportation Policy (FSM 7700, January 12, 2001) requires a determination of the minimum road system needed to meet resource needs and other management objectives relevant to the Forest Plan. The roads proposed in the Finger Mountain ROD represent the minimum road system needed for the Finger Mountain portion of the South Chichagof Road Analysis Area (SCIRAA).

The Finger Mountain Project Area Final EIS proposes to build 9.8 miles of classified road for long-term use within the project area. The reconstruction of 13.8 miles of existing classified roads will be needed to facilitate timber harvest for this project. In addition, about 10.9 miles of temporary roads will be needed to also facilitate timber harvest. All of the temporary roads will be closed and decommissioned and be allowed to return to a more natural state.

Approximately 13 miles of classified roads in the project area will be left open for public use for high clearance vehicles at the close of harvest activities. The remaining classified roads will be placed in "storage" or closed. These roads will still be part of the long-term forest road transportation system.

### **Forest Plan Consistency**

The amount of road system necessary to implement sound multiple use management of National Forest System lands is based on the Forest Plan (1997) and identified community needs. The activities proposed for road construction and maintenance in the Finger Mountain Project Area respond to the Forest Plan goals and objectives to provide forest access for forest users and to protect water, soil, fish, and other resources. The amount of road construction proposed (9.8 miles) when combined with other proposed roads Forest-wide is well within the

## Record of Decision

Forest Plan objective of up to 110 miles annually. This road system works toward the desired future condition of a well-maintained transportation system that meets the needs for National Forest management and public use. Road Management Objectives have been updated to reflect any changes needed in road maintenance levels within the project area. Roads have been selected for closure based on resource concerns, public use, and funding. Conflicts with roads and land use designations have been resolved. The location and design of all new roads will meet the Forest Plan standards and guidelines (Forest Plan, page 4-104 to 4-110). Stream crossing structures have been analyzed for safety and resource concerns.

# Appendix 1

## Forest Plan Significance Analysis: Small Old-growth Habitat Reserve Adjustments in VCUs 231 and 232

### Introduction

Based on the project-level analysis process as described in the old-growth management prescriptions and Appendix K of the Tongass National Forest Land and Resource Management Plan (1997 Forest Plan), the Old-growth Habitat Reserves located in Value Comparison Units (VCUs) 231 and 232 in the Finger Mountain Project Area have been adjusted to better meet size, location, and/or habitat composition criteria in these VCUs.

The Secretary of Agriculture's implementing regulation indicates the determination of significance to be "...based on an analysis of the objectives, guidelines and other contents of the forest plan" (36 Code of Federal Regulations (CFR) 219.10(f)). The Forest Service has issued guidance for determining what constitutes a "significant amendment" under the National Forest Management Act. This guidance, in the Forest Service Handbook (FSH) 1909.12, Chapter 5.32, identifies four factors to be used in determining whether a proposed change to the 1997 Forest Plan is significant or not significant. These four factors are: (1) timing, (2) location and size, (3) goals, objectives, and outputs, and (4) management prescriptions. The Alaska Region issued a Supplement to FSH 1909.12, Chapter 5.32, effective October 17, 1990 that includes an additional factor that can be considered in determining the significance of a Forest Plan Amendment. This additional factor deals with technical changes. An analysis of the factors is presented below.

#### Timing

The Forest Plan revision was completed in 1997. The old-growth habitat management prescription in the 1997 Forest Plan indicates that small and medium mapped reserves have received differing levels of field verification and integration of site-specific information in their design. During project level environmental analysis, for project areas that include or are adjacent to mapped Old-growth Habitat Reserves, the size, spacing, and habitat composition of mapped reserves may be further evaluated.

#### Location and Size

The boundaries of the reserves in VCUs 231 and 232 have been adjusted (refer to Figure BD-1 in Chapter 3 of the Finger Mountain Timber Sale(s) FEIS to view this adjustment). An additional 476 acres were added to the small OGR in VCU 231, and 117 acres were added to the small OGR in VCU 232. A complete analysis of the Old-growth Habitat Reserve boundary adjustments may be found in the Finger Mountain Timber Sale Final EIS, Chapter 3, Biodiversity and Old-growth Section.

# 1 Appendix

## Goals, Objectives, and Outputs

### Goals

The 1997 Forest Plan goal for biodiversity is to maintain healthy forest ecosystems and maintain a mix of habitats at different spatial scales (i.e., site, watershed, island, province, and Forest) capable of supporting the full range of naturally occurring flora, fauna, and ecological processes native to Southeast Alaska. The adjustments to the small Old-growth Habitat Reserves are consistent with the goals of the 1997 Forest Plan.

### Objectives

The following objectives are included in the Forest Plan: (1) to maintain a Forest-wide system of old-growth forest habitat (includes reserves, non-development land use designations [LUDs], and beach, estuary, and riparian corridors) to sustain old-growth associated species and resources, and (2) to ensure that the reserve system meets the minimum size, spacing, and composition criteria described in Appendix K of the 1997 Forest Plan. The adjustments to these small and medium Old-growth Habitat Reserves were specifically designed to meet the 1997 Forest Plan objectives.

### Outputs

Adjustments to the small Old-growth Habitat Reserves in VCUs 231 and 232 will have relatively minor effects on 1997 Forest Plan outputs on a forest-wide basis.

## Management Prescriptions

None of the standards and guidelines associated with the management prescriptions has been changed as a result of this amendment. The changes to the two mapped small Old-growth Habitat Reserves apply only to this specific situation. These changes also would apply in future management; however, this action does not preclude future modifications so long as the standards and guidelines for the management prescription are achieved. The proposed amendment fulfills the desired future condition for the Old-growth Habitat LUD Management Prescription as defined in the 1997 Forest Plan and would not significantly affect the goods and services produced.

## Technical Changes

Technical changes to a plan's management direction may be made on the basis of new information about the actual resource characteristics of the area. This category does not apply to this case.

## Cumulative Changes

The Finger Mountain Timber Sale(s) is one of 16 National Environmental Policy Act (NEPA) decisions (as of May 2003) to make non-significant amendments to the 1997 Forest Plan by modifying LUD boundaries. The Niblack Environmental Assessment (EA) changed a Wild River non-development LUD to Old-growth Habitat and Timber Management LUDs. The remainder of the amendments involved enlargement or reduction of Old-growth Habitat LUDs, usually exchanging acres with one of the resource development LUDs in order to more effectively meet 1997 Forest Plan objectives. Usually, wherever an Old-growth Habitat LUD expanded, it caused a corresponding reduction of acres suitable for timber harvest. Likewise, an Old-growth Habitat LUD size reduction usually meant an increase in suitable acres.

While the LUD changes within each project decision constituted non-significant Forest Plan amendments, Table A1-1 displays the accumulated effect on suitable acres for all projects. For each project, the table displays suitable acres that were changed from a non-development LUD to a resource development LUD or from a development LUD to Old-Growth Habitat. The net change in suitable acres represents less than one percent of the suitable land base.

**Table A1-1: Effects of Forest Plan Amendments on Acres Suitable for Timber Harvest as of May 2003**

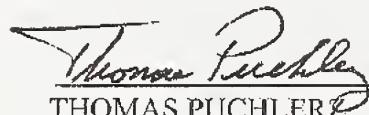
Project	Non-development to Development LUD	Development to Non-development LUD	Net Changes in Suitable Acres
Finger Mountain	0	593	-593
Cholmondeley EIS	894	6,873	-5,979
Woodpecker EIS	180	130	+50
Salty EA	99	126	-27
Luck Lake EIS	257	794	-537
Polk Small Sales EA	0	153	-153
Doughnut	0	19	-19
Kuakan EIS	416	542	-126
Sea Level EIS	185	500	-315
Canal Hoya EIS	0	151	-151
Chasina EIS	0	78	-78
Control Lake EIS	446	142	+304
Crystal Creek EIS	481	1,153	-672
Nemo Loop EA	177	932	-755
Todahl Backline EA	2	363	-361
Fire Cove Salvage EA	186	633	-447
Niblack EA	252	0	+252
Total	3575	13,182	-9607

Source: 2001 Monitoring Report and GIS Analysis

## Conclusion

Based on a consideration of the factors above, I conclude adoption of this amendment is not significant in a National Forest Management Act context. This amendment is fully consistent with the 1997 Forest Plan goals and objectives. The amendment provides added detail on implementation of the old-growth habitat management prescriptions of the 1997 Forest Plan.

I hereby amend the 1997 Forest Plan with this non-significant amendment by adjusting the small Old-growth Habitat Reserves in VCUs 231 and 232 as shown on the map titled *Existing and Additions to Old-Growth Reserves Proposed for the No Action and Action Alternatives for the Finger Mountain Project Area* (i.e., Figure BD-1, Chapter 3, Finger Mountain Timber Sale(s) FEIS) and as documented in the project planning record for the Finger Mountain Timber Sale(s) Final EIS.

  
\_\_\_\_\_  
THOMAS PUCHLER  
Forest Supervisor

6-20-03

\_\_\_\_\_  
Date

# Summary

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# Summary

## Introduction

This summary outlines the effects of proposed timber sale(s) and several alternatives on southeast Chichagof Island known as the Finger Mountain Project. It describes the “No Action” Alternative (Alternative A), a “proposed action” (Alternative B), and three other alternative strategies for harvesting timber. The four action alternatives also include building and maintaining roads and log transfer facilities (LTFs) to transport the timber harvested in this project out of the area. The details of the project are fully presented in the Finger Mountain Timber Sale(s) Final Environmental Impact Statement (FEIS). The FEIS discloses the environmental effects that are expected from the Proposed Action and each of the other alternatives, including the No-Action Alternative.

The Finger Mountain Project Area incorporates approximately 72,780 acres on Chichagof Island in Southeast Alaska. It extends from Peril Strait in the south to Tenakee Inlet on the north and is located about 38 air miles north of Sitka, 24 air miles northwest of Angoon, and 3 air miles southwest of Tenakee Springs. The Sitka Ranger District of the Tongass National Forest administers the project area.

## Proposed Action

The proposed action for the Finger Mountain Timber Sale(s) Project is to plan for the sale and harvest of approximately 21 million board feet (MMBF) of timber from 936 acres of National Forest land. This would require about 21 miles of new road construction, and 14 miles of road reconstruction. One temporary drive-down ramp log transfer facility would be constructed on an approved site at Inbetween Creek (Value Comparison Unit [VCU] 230), and one reconstructed barge facility would be used near the mouth of Crab Bay (VCU 233). Timber from this project would be offered through the Tongass National Forest timber sale program through two or more sales of varying sizes. This Proposed Action is described in more detail in the Alternatives section of Chapter 2 in the FEIS.

## Decisions to be Made

The Tongass Forest Supervisor will decide whether and how to make timber available from the Finger Mountain Project Area, in accordance with Forest Plan goals, objectives, and desired future conditions. The decision is documented in the Record of Decision (ROD) and includes:

- the estimated acreage to be treated in this project area in multiple timber sales,
- the location of timber harvest units, road systems, and LTFs,
- access management measures (road, trail, and area restrictions and closures),
- mitigation measures and monitoring requirements for sound resource management,
- whether there may be a significant possibility of a significant restriction on subsistence uses, and
- whether it is necessary to adjust the location of small old-growth reserves within the project area and, if so, how it should be adjusted.

### Forest Plan Goals and Objectives

## Purpose and Need

The Finger Mountain Project is proposed at this time to respond to goals and objectives of the 1997 Forest Plan and to help move the project area toward the desired future conditions described in that plan. The 1997 Forest Plan includes forest-wide goals and objectives, as well as area-specific (land use designation) goals, objectives, and desired future conditions. Applicable forest-wide goals and objectives (see 1997 Forest Plan, pp. 2-3 and 2-4) include:

- manage the timber resource for production of saw timber and other wood products from suitable timber lands made available for timber harvest on an even-flow, long-term, sustained basis and in an economically efficient manner,
- seek to provide a timber supply sufficient to meet the annual market demand for Tongass National Forest timber and the market demand for the planning cycle,
- provide a diversity of opportunities for resource uses that contribute to the local and regional economies of Southeast Alaska, and
- support a wide range of natural-resource employment opportunities within Southeast Alaska's communities.

The Finger Mountain Project provides supplemental analysis for six Value Comparison Units (VCUs) within the 1992 Southeast Chichagof Project Area. This supplemental analysis is being undertaken to meet the terms of the Settlement Agreement (filed May 16, 1996) of the lawsuit initiated by the Alaska Wilderness Recreation and Tourism Association. It is intended to supplement the analysis contained in the FEIS and the ROD for the Southeast Chichagof Project published in 1992.

Four 1997 Forest Plan Land Use Designations (LUDs) are located within the project area. The goals of two of these (Modified Landscape and Timber Production) are similar to the forest-wide goals and objectives listed above. For Timber Production, the desired future condition includes a sustained yield of timber, healthy tree stands in a balanced mix of age classes from young stands to trees of harvestable age, and a road system providing access for timber management as well as recreation, hunting and fishing, and other public uses. Recreation opportunities associated with roaded settings are available. Wildlife habitats are predominantly in the early and middle successional stages.

The Modified Landscape LUD includes but modifies these desired conditions to take into account the scenic quality of foreground landscapes. Recreation opportunities associated with natural-appearing to modified settings are available. A variety of successional stages provides a range of wildlife habitat conditions.

The third LUD in the project area is Old-growth Habitat. Its primary goal is to maintain areas of old-growth forests to provide habitat for old-growth associated fish and wildlife species. The desired future condition for the Old-growth Habitat LUD is for all forested areas to attain old-growth forest characteristics and to provide a diversity of old-growth habitat types, associated species, and ecological processes.

The Scenic Viewshed LUD is the fourth land use designation in the project area. The primary goal for this LUD is to recognize the scenic values of suitable timber lands viewed from selected popular roads, trails, marine travel routes, recreation sites, bays, and anchorages, and modify timber harvest practices accordingly. The desired future condition emphasizes a natural-appearing landscape as viewed by users of Visual Priority Travel Routes and Use Areas. Recreation and tourism opportunities in a range of settings are available. A variety of successional stages providing wildlife habitat occur, although later successional stages predominate.

## **Issues**

Significant issues for the Finger Mountain Project were identified through public and internal scoping. Similar issues were combined into one statement where appropriate. The following five issues were determined to be significant and within the scope of the project decision.

### **Issue 1. Old-growth associated wildlife**

Logging and road building will decrease the amount of forest exhibiting old-growth conditions. Several animal species, including Sitka black-tailed deer, brown bear, marten, and northern goshawk, are associated with old-growth forested conditions. Many people are concerned that the decrease in old-growth forest resulting from this project, alone and in combination with past and future projects, will have a negative impact on these animal species.

### **Issue 2. Subsistence opportunities**

Timber harvest and road building may impact subsistence opportunities through changes in the abundance of, access to, and/or competition for subsistence resources. Abundance of deer may decrease for people in Tenakee Springs as a result of harvest near Crab Bay and Inbetween. Road building and logging camps may increase access to and competition for deer.

### **Issue 3. Scenic resources and recreation experiences**

Scenic resources and recreation experiences may be affected by the timber harvest and road construction associated with this project. The amount, type, and location of timber harvest and road construction may impact scenic views from Tenakee Springs and throughout much of Tenakee Inlet, including popular anchorages and recreation areas. Some less-developed recreation places may no longer provide the same type of recreation experience following timber harvest and road construction.

### **Issue 4. Log transfer facilities, camps, and the marine environment**

The introduction of industrial logging operations, logs, and “commuter” boat traffic alters, to some degree, the nature of the marine environment and seascape. These effects may be more pronounced if the LTF(s) at Crab Bay and Inbetween are active at the same time as the reconstructed LTF planned for the Indian River Timber Sale on the north shore of Tenakee Inlet. LTFs and camps associated with the Finger Mountain Timber Sale(s) may impact the marine environment.

### **Issue 5. Economic opportunities for small-scale timber operators**

Large harvest units require the successful bidder to invest a substantial amount of capital in yarding equipment that is priced beyond the reach of most small operators. By emphasizing large units and large sales in this project, we may be limiting our ability to provide small sales, thereby limiting economic opportunities for small-scale timber operators.

## **Alternatives**

The Proposed Action (Alternative B) and the three other action alternatives provide different responses to the significant issues while still meeting the stated purpose and need for the project. Each alternative represents a site-specific proposal developed through inter-

disciplinary team evaluation of timber harvest unit and road design based on high-resolution photos, data in our geographic information system (GIS), and field verification.

The Forest Service uses many mitigation and preventative measures in the planning and implementation of land management activities. The application of these measures begins during the planning and design phases of a project, and continues through all phases of subsequent forest management and monitoring related to the project. The site-specific application of 1997 Forest Plan standards and guidelines and other mitigation measures are identified on the harvest unit and road cards for the project (Appendices B and C).

All applicable 1997 Forest Plan standards and guidelines are incorporated, including those for beach and estuary fringe habitats, riparian areas, fisheries habitats, high vulnerability karst resources, heritage (cultural and historical) resources, soil productivity, and water quality.

Each alternative complies with the 1997 Forest Plan habitat conservation strategy designed to ensure well-distributed, viable populations of wildlife. The small old-growth habitat reserves (the Old-growth Habitat LUD or OGR) mapped in the 1997 Forest Plan FEIS that are within VCUs in which timber harvest and/or new road construction is proposed have been evaluated for size, spacing, and habitat composition.

Due to the high likelihood that herring will spawn in and near Crab Bay, reconstruction and operation of the LTF will be restricted (i.e., no use) from April 15 – June 15 each year unless the Forest Service and ADF&G agree differently. Fuel transfers would be allowed during this period to maintain inland heavy equipment operations. The contractor(s) is responsible for any and all clean-up costs and civil damages resulting from the negligent spill of any hazardous material, including fuel.

All roads have been located and will be designed to avoid or minimize effects on wetlands. Risks from windthrow have been evaluated, and means to minimize windthrow in riparian buffers are incorporated into all harvest unit prescriptions. All units within the viewshed of a priority travel route or use area, as identified in the 1997 Forest Plan, have been designed to meet the visual quality objectives of the Modified Landscape LUD.

Harvest systems other than clearcutting are prescribed for 78 to 97 percent of the harvest units, depending on the alternative. All proposed harvest prescriptions meet the 1997 Forest Plan standards and guidelines for marten habitat by leaving 10 to 20 percent of the original stand structure including four large live trees and three large decadent trees per acre in the high-value marten habitat within units.

Maps of all alternatives considered in detail are provided in Chapter 2 of this FEIS. The map for Alternative A, the No-Action Alternative, represents the current condition of the project area. Table Summary-1 provides an overview of some of the outputs, activities, or effects of the four action alternatives. Alternative A has no outputs or measurable effects but provides the basis for comparison of the action alternatives.

## **Alternative A (No-Action)**

Alternative A proposes no new timber harvest or road construction from the Finger Mountain Project Area at this time. Free use permits would not be restricted under this alternative. It does not preclude timber harvest from other areas or from the Finger Mountain Project Area at some time in the future. This alternative represents the existing condition against which the other alternatives are compared.

## **Alternative B (Proposed Action)**

Alternative B is the project Proposed Action and the preferred alternative in the Draft EIS. The emphasis of this alternative is to reduce potential scenic impacts from Tenakee Inlet and

protect popular subsistence use areas. The majority of the harvest and road construction is proposed further up the valleys, away from saltwater, and in areas that are not visible from the inlet. It also minimizes harvest near saltwater where the heaviest subsistence activity occurs.

Alternative B was analyzed as two smaller sales; with the smallest being 8,798 thousand board feet (MBF). However, smaller sales could be sold from this alternative by advertising a single harvest unit separate from the remaining volume. This could provide sales as small as 416 MBF.

## Alternative D

The emphasis of Alternative D is to minimize potential effects to areas of key wildlife habitat not already covered by 1997 Forest Plan direction. Units were selected to maintain elevational connections between alpine and saltwater, as well as horizontal landscape connections between high-value habitats. Some units would be selectively harvested to maintain forest structure and cover in these areas.

Alternative D was analyzed as two smaller sales, with the smallest being 6,829 MBF. However, smaller sales could be sold from this alternative by advertising a single unit separate from the remaining volume. This could provide sales as small as 28 MBF.

## Alternative F

The emphasis of Alternative F is to further minimize potential effects to scenic resources in Tenakee Inlet and Crab Bay beyond what is required in the 1997 Forest Plan. Harvest prescriptions were selected that reduce or eliminate potential scenic effects viewed from these areas. Harvest in the Inbetween drainage was deferred to minimize harvest visible from the Inlet. Selection harvest is also prescribed in some units to maintain important wildlife habitat structure. Alternative F also minimizes construction of new roads by reconstructing existing roads and constructing new temporary roads.

Alternative F was analyzed as one sale that would rebuild infrastructure; however, smaller sales could be sold from this alternative by advertising a single unit separate from the remaining volume. This could provide for sales as small as 20 MBF.

## Alternative H

The emphasis of this alternative is to promote a greater number of very small sale opportunities by first rebuilding existing infrastructure. The alternative was designed to try to incorporate some of the ideas within the Chichagof Conservation Council (CCC) Alternative (one of the alternatives eliminated from detailed study). That alternative proposed to “eliminate new permanent road construction (minimizing effects to brown bears), emphasize alternative logging practices where feasible (minimizing effects on subsistence and scenic resources), preclude the construction of new LTFs (minimizing impacts on the marine resources and uses), and establish opportunities for the long-term promulgation of very small timber sales from this sale area (maximizing economic benefit for Tenakee Springs residents).” Harvest in the Inbetween drainage was deferred to minimize visible harvest from the Inlet.

Alternative H was analyzed as one larger sale needed to rebuild the infrastructure; however, smaller sales could be sold from this alternative by advertising single or multiple units separate from the remaining volume. This could provide for sales as small as 20 MBF.

# Summary

**Table Summary-1**  
**Comparison of Alternatives**

	ALT A No-Action	ALT B	ALT D	ALT F	ALT H
<b>Acres Feasible for Harvest<sup>1</sup></b>	4,604	4,604	4,604	4,604	4,604
<b>Proposed Treated Acres<sup>2</sup></b>	0	1,027	1,148	931	250
<b>Proposed Harvest Acres<sup>3</sup></b>	0	936	1,036	827	223
<b>% Total Productive Forest Acres Harvested<sup>4</sup></b>	0%	2.6%	2.8%	2.3%	0.6%
<b>Harvest by Management System</b>					
Even-aged (acres)	0	902	816	187	168
Two-aged (acres)	0	125	178	171	82
Uneven-aged (acres)	0	0	154	573	0
<b>Harvest by Silvicultural Prescription</b>					
Clearcut (acres)	0	153	116	7	0
Clearcut with Reserves (acres)	0	867	852	265	205
Individual Tree Selection (acres)	0	0	180	600	1
Strip Cuts (acres)	0	0	0	59	44
Overstory Removal (acres)	0	7	0	0	0
<b>Total Volume Harvested (MMBF)<sup>5</sup></b>	0	21.4	19.8	10.9	4.1
Cable/Shovel	0	21.4	17.5	5.8	4.1
Helicopter	0	0	2.3	5.1	0
<b>Net Stumpage Value<sup>6</sup></b>					
Expected Bid (\$/ccf)	0	(5.50)	(7.51)	(27.58)	(22.50)
Current Market Revenue (\$)	0	(291,007)	(398,827)	(815,619)	(285,094)
<b>Direct Employment Potential During Sale(s)</b>	0	140	140	78	33
<b>New Classified Road Construction (miles)</b>	0	9.8	6.7	0	0.6
<b>New Temporary Road Construction (miles)</b>	0	10.9	8.0	4.3	3.0
<b>Existing Road Reconstruction (miles)</b>	0	13.8	13.0	9.5	5.9
<b>Road Density (miles per square mile)</b>	0.2	0.3	0.3	0.2	0.2
<b>Road Miles Maintained Open (new &amp; existing)</b>	2.7	13.0	4.6	7.3	4.0
<b>Number of LTF Sites Used</b>					
Drive-down slide facility	0	1	1	0	0
Bulkhead (barge) facility	0	1	0	0	0
Slide Facility	0	0	1	1	1
<b>Logging Camps Proposed</b>					
Land camp	N/A	N/A	N/A	N/A	N/A
Floating Camp	N/A	Crab Bay	Crab Bay	Crab Bay	Crab Bay
<b>Scenic Ranking (based on vantage points of concern identified during scoping)</b>	1	3	4	2	2
<b>ROS<sup>7</sup> Class (% of Project Area)</b>					
Primitive	39%	38%	39%	39%	39%
Semi-Primitive Non-Motorized	44%	36%	38%	40%	43%
Semi-Primitive Motorized	4%	5%	4%	4%	5%
Roaded Modified	13%	21%	19%	17%	13%
<b>% of High Value Deer and Marten Habitat (existing in 1999), Unharvested in WAA<sup>8</sup> 3629</b>					
Deer (6,404 acres)	100%	98%	98%	99%	99%
Marten (6,770 acres)	100%	97%	98%	99%	>99%

<sup>1</sup> Feasible acres are available for harvest as defined in the 1997 Forest Plan and have been checked for logging feasibility.

<sup>2</sup> Proposed Treated Acres are total acres (including riparian reserves) within units where harvest is proposed.

<sup>3</sup> Proposed Harvest Acres actually to receive cutting within units where harvest is proposed (does not include riparian reserves).

<sup>4</sup> Forested land is categorized into productive and non-productive forest land for purposes of managing timber. The Forest Service defines productive forest land as capable of producing 20 cubic feet per acre per year. The figures in this row are derived by dividing Proposed Harvest Acres by 35,917 (the amount of total productive forest acres within the project area).

<sup>5</sup> MMBF = million board feet of timber volume.

<sup>6</sup> Parentheses denote negative values.

<sup>7</sup> ROS = Recreation Opportunity Spectrum (see Recreation section in Chapter 3).

<sup>8</sup> WAA = Wildlife Analysis Area (see MIS and Endemic Terrestrial Mammals section in Chapter 3).

## Comparison of Alternatives

Each alternative addresses the project issues differently. Following is a brief discussion of how the alternatives respond to the five significant issues. The discussion refers frequently to the information displayed in Table Summary-1.

### Issue 1: Old-growth Habitat and Associated Wildlife

Alternative A proposes no timber harvest or road construction and has no adverse effects to wildlife habitat. All action alternatives incorporate and apply 1997 Forest Plan standards and guidelines for riparian areas, beach and estuary fringe, goshawk, and marten. No timber harvest would occur in beach or estuary fringe habitats in any alternative. Units proposed for harvest in action alternatives were selected and designed to preserve the integrity of old-growth habitat and to maintain connectivity. Each VCU in the project area includes a small OGR, part of a forest-wide system of habitat reserves. All of the reserves have been evaluated with interagency involvement. Together these reserves encompass 11,250 total acres, of which 6,226 are productive old-growth habitat (POG). POG is defined as having a timber volume of greater than eight thousand board feet per acre and is defined as volume strata low, medium, and high in the GIS database (Forest Plan 1997, p. 7-31). All alternatives will include the Interagency recommended additions of 476 acres (315 acres in POG) to VCU 231 and 117 acres (110 acres in POG) to VCU 232. With these additions, the No-Action and action alternatives will comply with the 1997 Forest Plan standards for small OGR. Because harvest activities will not occur within OGR, there will be no direct effects to OGR as a result of the alternatives. Therefore, all alternatives maintain important old-growth forest connections between blocks of key habitat.

The alternatives differ in the total amount, type, and location of timber harvest proposed that could affect biodiversity and wildlife habitat. Within existing forested habitat (55,731 acres), approximately 61 percent (33,967 acres) is POG habitat<sup>1</sup>. Alternative D proposes the most acres of harvest of POG habitat (3 percent or 1,109 acres<sup>2</sup>). Alternative B proposes 3 percent harvest (910 acres), and Alternative F proposes 2 percent harvest (770 acres). Alternative H proposes the least harvest of POG habitat (1 percent or 205 acres). Overall, between 97 and 99 percent of the existing POG will be maintained in the project area.

Lower elevation (0 to 800 feet) POG habitat is important to deer because it provides habitat during the winter. Between 1 and 3 percent of the POG proposed for harvest is in the lower elevations (0-800 feet). Alternative D proposes to harvest the greatest amount of low-elevation POG (899 acres). Alternative B, F, and H propose to harvest 530, 402, and 205 acres of low-elevation POG, respectively.

An estimated 6 percent (3621 acres) of the stands within existing forested habitat have a coarse canopy texture (for a description of coarse canopy, please refer to the discussion of habitat connectivity in the Biodiversity and Old-growth section of the FEIS, Chapter 3). Alternatives B and D propose to harvest 3 percent of coarse canopy habitat, whereas

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<sup>1</sup> POG is defined as having a timber volume of greater than eight thousand board feet per acre and is defined as volume strata low, medium, and high in the GIS database (Forest Plan 1997, p. 7-31). POG differs from productive forest, which is a concept used for the purpose of managing timber. Productive forest is defined as forest land capable of producing 20 cubic feet of timber per acre per year.

<sup>2</sup> Acres do not include units with 25 percent individual tree selection harvest prescription because these units should have minimal effects on old-growth wildlife habitat (see the Management Indicator Species and Endemic Terrestrial Mammals section in Chapter 3 of this EIS).

Alternative F proposes a less than 1 percent reduction in coarse canopy habitat, and Alternative H proposes no reduction.

Habitat parameters that provide for high-value deer habitat include higher volume stands on south aspects, lower elevations, and low average snow depth. Reduction of high-value deer habitat from the existing level would occur only in WAA 3629. The largest reduction would occur as a result of Alternative B or D; each proposes a 2 percent reduction in high-value deer habitat. Alternatives F and H would reduce high-value deer habitat by 1 percent.

The largest reduction of high-value marten habitat would occur in Alternative B with a 3 percent reduction (188 acres). Alternative D would reduce habitat by 2 percent (149 acres), and Alternative F would reduce habitat by 1 percent (79 acres). Of the action alternatives, Alternative H proposes the smallest reduction of high-value marten habitat (15 acres—a less than 1 percent reduction). All alternatives would retain at least 97 percent of the high-value marten habitat present that was available in the project area in 1999.

Marten harvest from trapping can substantially increase when road densities reach greater than 0.2 mile per square mile and roads are connected to communities. The current project area road density is 0.1 mile per square mile, with higher densities within VCUs 230, 233, and 234. However, these VCUs are not part of an interconnected road system and are not expected to receive the same kind of harvest that might otherwise be predicted. During implementation of the project, the road density of the project area would be 0.3 mile per square mile in Alternative B, 0.2 mile per square mile in Alternative D and 0.1 mile per square mile in Alternatives F and H. As a result of implementing the road management objectives, the open road densities after completion of the harvest activities would be below 0.2 mile per square mile in all alternatives, and the effects of trapping would not be significant.

## Issue 2: Subsistence Opportunities

Since no harvest or road construction is proposed in wildlife analysis area (WAA) 3309 (VCU 246) in any alternative, no effects on subsistence are anticipated. (See Figure Wildlife-1 in Chapter 3 for WAA boundaries.) The residents of Tenakee Springs harvest approximately 32 percent of their subsistence deer from WAA 3629 (VCUs 230-234). Although several other communities, including Haines, Skagway, and Yakutat, also use the area for subsistence purposes, only a small portion of these communities' subsistence resources is obtained there. Alternatives B, D, and F propose activities in this WAA. The effects on subsistence to Tenakee Springs are analyzed in terms of access to subsistence resources, abundance and distribution, and competition for these resources.

There are no anticipated restrictions on access to the project area for subsistence purposes in any alternative. Additional access to WAA 3629 from constructed LTFs and roads would vary by alternative; however, due to its location across Tenakee Inlet, very little use by motorized vehicles or ATVs is expected.

Declines in deer abundance and changes in distribution are analyzed in terms of habitat loss due to harvest of POG and, specifically, deer winter habitat. These are discussed in Issue 1 (Old-growth-associated wildlife). Through implementation of 1997 Forest Plan standards and guidelines that protect deer winter habitat, each of the alternatives reduces the level of decline in deer abundance. These standards and guidelines include a 1,000 foot beach and estuary fringe no-harvest zone along all saltwater shoreline, and riparian no-harvest buffers around all streams that have potential to effect fish habitat. In addition, at least one small OGR is located within each VCU (major watershed).

The average deer harvest for Tenakee Springs in the communities' three primary use areas (WAAs 3629, 3526, and 3627) is currently at 6.8 percent of habitat capability. This is below

the anticipated level where reduced hunter efficiency is anticipated (10 to 20 percent habitat capability) and well below the level where a restriction on hunter access may be necessary (greater than 20 percent). After 100 years of full implementation of the 1997 Forest Plan, demand by all hunters in these WAAs is projected to reach 16.4 percent of habitat capability. This is still below the 20 percent level for restricting hunter access. Our analysis shows that no significant restrictions on any subsistence resource from past, current, and reasonably foreseeable future actions would occur in any alternative (see Chapter 3).

There may be temporary increases in competition during harvest operations from the presence of logging crews at proposed logging camps. This would be a short-term effect for approximately 3 to 5 years per sale (some may run concurrently) while the roads are constructed and the sale is harvested. Alternatives B, D, F, and H, because they propose a floating logging camp in Crab Bay, could temporarily increase competition near Crab Bay.

The alternatives vary in the amount of timber volume proposed for harvest. The more volume an alternative proposes for harvest, the more likely that alternative is to temporarily increase subsistence competition during harvest operations. This is because the sale contract associated with the alternative is likely to be longer, and logging crews would remain in the area for a longer time. Given that, Alternatives B and D would likely increase competition more than the other alternatives for they propose a harvest volume of 21.4 MMBF and 19.8 MMBF, respectively. Among the action alternatives, Alternative H proposes a harvest volume of 4.1 MMBF, the lowest of any of the alternatives. Therefore, Alternative H is likely to result in a lower increase in competition than any of the other action alternatives.

### **Issue 3: Scenic Resources and Recreation Experiences**

All alternatives are consistent with the visual quality objectives established within the 1997 Forest Plan. In addition, they comply with the 1997 Forest Plan standards and guidelines for beach and estuary fringe, and riparian buffers. No timber harvest would occur within 1,000 feet of any shoreline or estuary area, or around any streams with potential to effect fish habitat or water quality in any alternative. These no harvest areas would greatly reduce scenic impacts from saltwater locations surrounding the project area.

All alternatives were analyzed from 1997 Forest Plan identified priority travel routes and use areas. Some units within the Inbetween drainage (VCU 230) would be visible from areas in the northwest reaches of Tenakee Inlet. Alternative D would have the most effect in this area. Alternative B would have some visible harvest but most units are located two or more miles up the valley. Alternatives A and F would have no visible effect in this area. Harvest in this drainage would not be seen from the primary travel routes.

Several harvest units in Alternatives B and D located at the mouth of Crab Bay (VCU 233) are visible from the ferry route and small boat route in Tenakee Inlet. The scenic effects from harvest in this area and the Fog Creek drainage (VCU 234) would be greatest in Alternative D. Alternative F would have little effect from harvest in this area as viewed from Crab Bay, Tenakee Inlet, and Tenakee Springs.

Four main vantage points were identified during scoping as locations where the views may be adversely impacted by timber harvest and associated activities. These included the views from Tenakee Springs, Tenakee Inlet, Crab Bay, and Saltery Bay. The views from Saltery Bay would not be affected by any alternatives, as harvest was deferred in this area at this time. The alteration of the landscape visible from Tenakee Springs, Tenakee Inlet, and Crab Bay is greatest in Alternative D, and least in Alternative F. (Refer to the Issue 4 discussion on scenic effects from LTFs, logging camps, and decking yards.)

With the proposed harvesting and roading in VCUs 230, 233, and 234, people seeking to use this area for the existing primitive recreation experience would possibly have to go elsewhere.

Alternative B would have the greatest impact on recreation experiences in the entire project area due to the amount of ground disturbance proposed and time necessary to complete the harvest activities. Alternative F would have the least impact because 100 fewer acres are disturbed and 10 MMBF less volume harvested than in Alternative B.

In each action alternative, road construction and harvesting would change the recreation opportunity from a more primitive experience to a more developed experience. Alternative B would have the greatest impact with an 8 percent decrease in the area available for Semi-primitive Non-motorized opportunities, which become Roaded Modified opportunities. Alternative F would have the least impact with a 4 percent decrease in Semi-primitive Non-motorized opportunities.

Alternative F would have the greatest effect on the existing Semi-primitive Motorized Recreation Places (9 percent decrease). The Crab Bay Semi-primitive Motorized Recreation Place would decrease by 161 acres in this alternative, becoming part of a more developed recreation experience. Alternative B would have the least effect with no changes to existing identified Recreation Places. Alternative D would decrease the size of the Little Seal Semi-primitive Motorized Recreation Place by 53 acres due to development from road building and harvesting in the Inbetween sale area.

## Issue 4: Log Transfer Facilities, Camps, and the Marine Environment

Tenakee Inlet is considered one of fourteen major herring stock areas of Southeast Alaska and Yakutat. When the amount of herring produced in this area exceeds 3,000 tons, the Alaska Department of Fish and Game (ADF&G) has allowed a bait fishery. The fishery occurred from 1978 through 1990. Weak herring returns prevented fishing from 1990 through 1996. Since 1996, herring stock numbers have rebounded, and the bait fishery was reopened. For 12 of 21 spawning seasons from 1979 through 1999, herring spawn was documented by ADF&G along the shoreline at or near the Crab Bay LTF site.

All of the action alternatives propose to reconstruct and use a LTF at the Crab Bay site on Tenakee Inlet. LTF reconstruction and operation at this site, have potential to impact herring due to concentrations of tree bark from rafted logs, sediment produced during LTF reconstruction and operation, and crushing of eggs deposited on the slide.

Alternative B proposes a bulkhead facility that would be used to barge all logs. Timing restrictions would apply during reconstruction but not operation. No logs would be placed or stored directly in saltwater, nor would equipment be operated on intertidal rocks. Alternatives D, F, and H propose reconstruction of a low-angle slide at Crab Bay with timing restrictions on both the reconstruction and operation of the facility. Due to the high likelihood that herring will spawn in and near Crab Bay, reconstruction and operation of the LTF will be restricted (i.e., no use) from April 15 – June 15 each year unless the Forest Service and ADF&G agree differently. Fuel transfers would be allowed during this period to maintain inland heavy equipment operations. The contractor(s) is responsible for any and all clean-up costs and civil damages resulting from the negligent spill of any hazardous material, including fuel.

Alternatives B, D, and H also propose to construct and operate a new temporary drive-down ramp at the mouth of Inbetween Creek (VCU 230) near a previously used site. Based on the State's information of the herring spawn, we do not expect this site to have any effect on the herring spawn in the Inlet.

The large size, linear shape, and saltwater location of LTFs generally present a very strong visual impact when viewed within a foreground distance. However, their relatively low profile helps to blend them into background views. Drive-down and slide-type LTFs usually present less of a visual impact than larger bulkhead-type facilities. The bold form of

bulkheads associated with barge LTFs prevents them from blending into the surrounding landscape. Often, the type of material and color of the bulkhead create strong contrasts that can be seen even in the background.

The temporary drive-down ramp LTF proposed at Inbetween in Alternatives B, D, and H should not present a dramatic visual impact from the Inlet, and any views of this LTF would only be for the duration of the sale(s). Alternative B also includes a bulkhead facility at the Crab Bay LTF site. This would have the greatest scenic effect, as this LTF site is located on Tenakee Inlet across from Tenakee Springs. Alternatives D, F, and H utilize a low-angle slide at this site which is likely to be less visible.

Clearings for decking and scale yards, and logging camps may also add to the visual impacts associated with LTFs. However, their location is usually on level or gently sloping sites, which helps to absorb much of their visual contrast when viewed from saltwater. With the recent removal of the log camp in Corner Bay, floating logging camps are being considered for this project in Crab Bay in Alternative B, D, F, and H. Visual impacts from floating camps are considered to be much less than more permanent upland camps.

## Issue 5: Economic Opportunities for Small-scale Timber Operators

Actual sales offered from any of the action alternatives would be determined at the time the sales are prepared and appraised. The determination of whether a small sale opportunity exists is usually based on sale economics, required yarding systems, necessary road and LTF construction, road management objectives, and interest by purchasers. Although all of the action alternatives except Alternative H were analyzed for medium to large sale sizes (6.8 to 13 MMBF), smaller sales could be offered from within any of these sales should purchaser interest warrant. Alternative H was designed as the smallest sale (4.1 MMBF) that would be economically feasible. None of the action alternatives proposes harvesting so much wood that the future wood supply or quality of wood by species would be rendered insufficient for small sale operators.

Alternative B would provide the greatest opportunity for offering future small sales following completion of the Finger Mountain Timber Sale(s) project; the project would result in construction of 9.8 miles of new system roads and reconstruction of 13.8 miles of existing roads. Thirteen miles of National Forest System roads will be maintained for vehicle access following the sales. The alternative also provides opportunities for small-scale timber operators within the scope of the Finger Mountain Project itself, in that only cable and shovel (no helicopter) yarding systems are proposed.

Alternative D is primarily designed with cable yarding systems. However, approximately 12 percent of the volume proposed for harvest under this alternative would be harvested by helicopter. This alternative has the best potential for offering small sales as a subset of the units proposed for this project. Location of the units near the LTFs, gentle topography, and better overall economics of the planned sales are positive factors for small sales within the current project. Since Alternative D maintains the fewest miles (4.6) of open National Forest System roads following the closure of the sales resulting from this project, future opportunities for small sales are fewer.

Alternative F proposes the largest proportion of helicopter harvest (47 percent of the volume proposed for harvest). Helicopter harvest is generally not economically feasible unless part of a larger sale. Alternative F proposes no new permanent road construction and only 4.3 miles of temporary road; this would limit future opportunities for small operators. However, there are some units available on the existing road that may be conducive to small operators. This alternative would result in 7.3 miles of National Forest open roads following the larger sale, which would provide some limited future opportunity to small operators.

## Summary

Alternative H is designed exclusively for cable or shovel yarding opportunities; no helicopter harvest is proposed. Alternative H proposes the least new road construction of the action alternatives. Only 0.6 miles of new permanent road and 3.0 miles of temporary road would be constructed under this alternative. In addition, 4.0 miles of open National Forest System road would be maintained following the closure of any sales resulting from this alternative.

# **Chapter 1**

## **Purpose and Need**



# Chapter 1

## Purpose and Need

### Introduction

In 1996, the case of *Alaska Wilderness Recreation and Tourism Association (AWRTA), et al. v. Morrison, et al.* resulted in a settlement agreement that “maintained an injunction pending compliance with NEPA” for certain units approved in the Southeast Chichagof Final Environmental Impact Statement (FEIS) Record of Decision (ROD). Those units from the Southeast Chichagof FEIS have been incorporated into the Finger Mountain Timber Sale(s). We have prepared this Environmental Impact Statement (EIS) on the potential effects of timber harvest in the Finger Mountain Timber Sale(s) Project Area in compliance with the AWRTA settlement agreement, the National Environmental Policy Act (NEPA), and other relevant federal and state laws and regulations.

The project area is located on Chichagof Island and is within the Sitka Ranger District, Tongass National Forest, Alaska. The east half of the Southeast Chichagof Project Area is not included in this analysis since units there were already harvested at the time of the settlement of *Alaska Wilderness Recreation and Tourism Association (AWRTA), et al. v. Morrison, et al.* This EIS discloses the direct, indirect, and cumulative environmental impacts and any irreversible or irretrievable commitment of resources that would result from the proposed action and alternatives.

This EIS is prepared according to the format established by Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1500-1508). Chapter 1, in addition to explaining the purpose and need for the proposed action, discusses how the Finger Mountain Timber Sale(s) Project relates to the 1997 Tongass Land and Resource Management Plan (1997 Forest Plan) and identifies the significant issues driving the EIS analysis. Chapter 2 describes the proposed action, compares it with four alternatives, including a No-Action Alternative, and summarizes the significant environmental consequences by issue. Chapter 3 describes the natural and human environments potentially affected by the proposed action and alternatives, and discloses what potential effects are anticipated. Chapter 4 contains the list of preparers, the EIS distribution list, literature cited, a glossary, and an index. Appendices provide additional information on specific aspects of the proposed project. This EIS also incorporates other documented analyses and studies by summarizing and referencing them.

The systematic approach the Interdisciplinary Team used to analyze the proposed project and alternatives, to estimate the environmental effects, and to prepare this EIS complies with NEPA and CEQ regulations. We coordinated our planning with the appropriate federal, state, and local agencies, and local federally recognized tribes.

The Sitka Ranger District has completed a landscape analysis of the Southeast Chichagof area to assess the physical, biological, social, and economic conditions of the area. The purpose was to increase our understanding of the ecological systems and human use of the area in a more broad landscape context. Environmental analysis in this EIS builds on the information included in that landscape analysis. The landscape analysis is located in the planning record for this project.

# 1 Purpose and Need

The 1997 Forest Plan sets forth in detail the direction for managing the land and resources of the Tongass National Forest. It is the result of extensive analysis, which is presented in the 1997 Forest Plan. A ROD was signed in 1997. A subsequent ROD superseded the 1997 ROD in May 1999. The Finger Mountain Timber Sale(s) Draft Environmental Impact Statement followed the direction of the 1999 ROD. In *AFA v. USDA*, the U.S. District Court, District of Alaska vacated the 1999 Forest Plan ROD and upheld the 1997 Forest Plan ROD. The Finger Mountain Timber Sale(s) Final Environmental Impact Statement follows the direction of the 1997 Forest Plan ROD.

The Roadless Area Conservation, Final Rule (Roadless Rule), was signed by the Secretary of Agriculture in January 2001. This rule generally established prohibitions on road construction, road reconstruction, and timber harvest in inventoried roadless areas on National Forest System lands. The Roadless Rule contains language that exempts projects for which a Notice of Availability (NOA) for a Draft EIS was published prior to January 12, 2001. The Finger Mountain Timber Sale(s) project meets these transition criteria.

## Proposed Action

A “proposed action” is defined early in the project-level planning process. It describes one possible alternative for harvesting timber that meets the purpose and need for the project. The proposed action serves as a starting point for the Interdisciplinary Team and gives the public and other agencies specific information on which to focus comments. Using these comments (see Issues later in this chapter) and information from preliminary analysis, the team then develops alternatives to the proposed action. These are discussed in detail in Chapter 2.

The proposed action for the Finger Mountain Timber Sale(s) project is to plan for the sale and harvest of approximately 21 million board feet (MMBF) of timber from 936 acres of National Forest System lands. This would require about 21 miles of new road construction, and 13 miles of road reconstruction. One temporary drive-down slide log transfer facility (LTF) would be constructed on an approved site at Inbetween Creek (VCU 230), and one reconstructed bulkhead (barge) facility would be used near the mouth of Crab Bay (VCU 233). Timber from this project would be offered through the Tongass National Forest timber sale program through two or more sales of varying sizes. This proposed action is described in more detail in the alternatives section (Chapter 2).

## Decisions to Be Made

Based on the environmental analysis in this EIS, the Tongass Forest Supervisor will decide whether and how to make timber available from the Finger Mountain Project Area in accordance with 1997 Forest Plan goals, objectives, and desired future conditions. The decision will be documented in the ROD and will include:

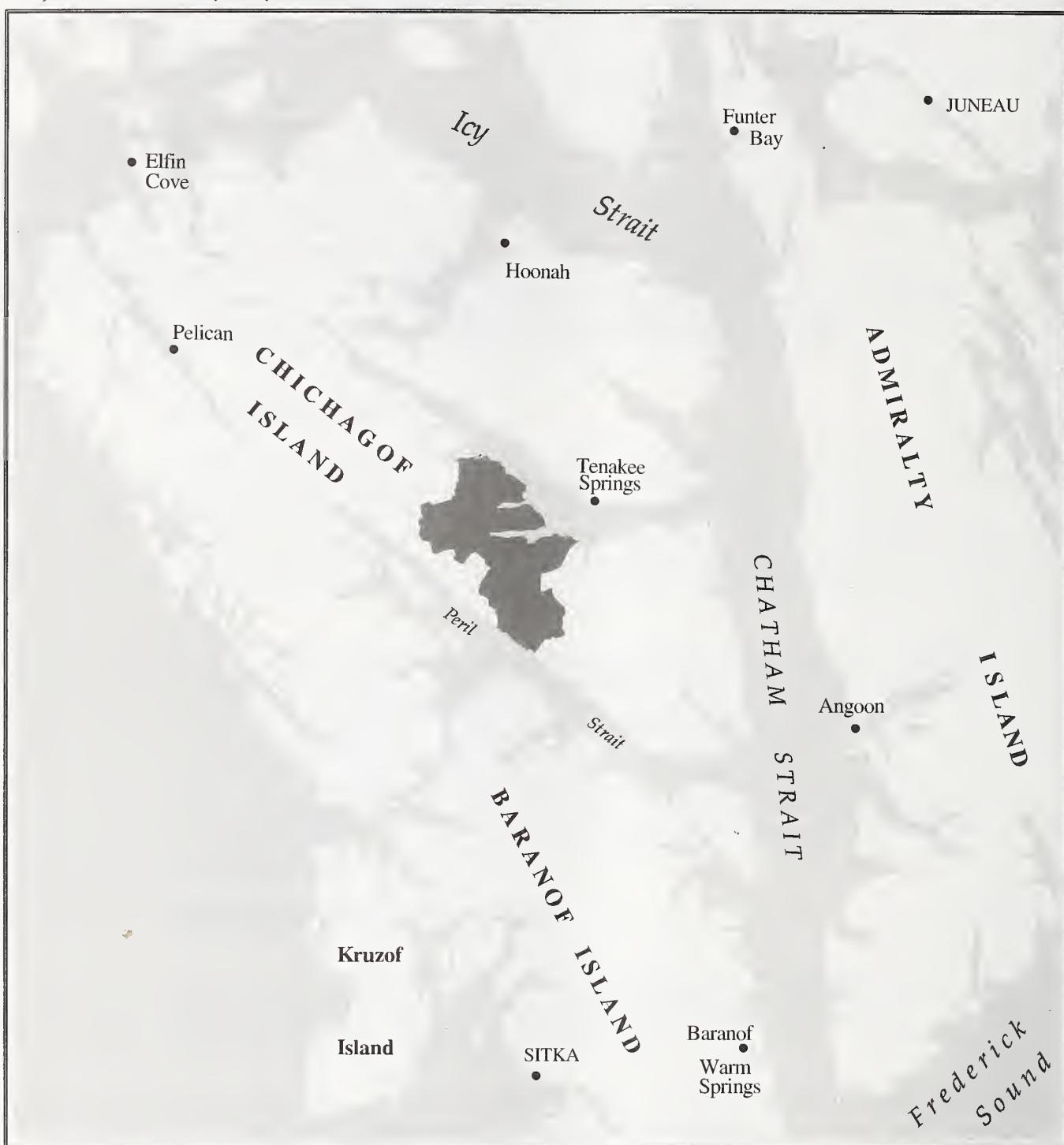
- the estimated acreage to be treated in this project area in multiple timber sales,
- the location of timber harvest units, road systems, and LTFs,
- access management measures (road, trail, and area restrictions and closures),
- mitigation measures and monitoring requirements for sound resource management,
- whether there may be a significant possibility of a significant restriction on subsistence uses, and

- whether it is necessary to adjust the location of small old-growth reserves within the project area and, if so, how it should be adjusted.

## Project Area

The Finger Mountain Project Area encompasses approximately 72,780 acres on Chichagof Island in Southeast Alaska. It extends from Peril Strait in the south to Tenakee Inlet on the north and is located 38 air miles north of Sitka, 24 air miles northwest of Angoon, and 3 air miles southwest of Tenakee Springs (Figure 1-1). The project area includes six value comparison units (VCUs): Inbetween Creek (230), Saltery Bay (231), Crab Bay (232), South Crab Creek (233), Fog Creek (234), and Broad Creek and Broad Finger Creek (246). VCUs are comparable to large watersheds and generally follow major watershed divides (see the Introduction to Chapter 3 for a more detailed definition). For analysis purposes, the project area boundaries correspond to VCU boundaries. VCUs are delineated in Figure 1-2.

Figure 1-1  
Project Area Vicinity Map



Finger Mountain  
Project Area



Scale in Miles



## Purpose and Need

### Forest Plan Goals and Objectives

The Finger Mountain Project is proposed at this time to respond to goals and objectives of the 1997 Forest Plan and to help move the project area toward the desired future conditions described in that plan. The 1997 Forest Plan includes forest-wide goals and objectives, as well as area-specific (land use designation) goals, objectives, and desired future conditions. Applicable forest-wide goals and objectives (see 1997 Forest Plan, pp. 2-3 and 2-4) include:

- manage the timber resource for production of saw timber and other wood products from suitable timber lands made available for timber harvest on an even-flow, long-term, sustained basis and in an economically efficient manner,
- seek to provide a timber supply sufficient to meet the annual market demand for Tongass National Forest timber and the market demand for the planning cycle,
- provide a diversity of opportunities for resource uses that contribute to the local and regional economies of Southeast Alaska, and
- support a wide range of natural-resource employment opportunities within Southeast Alaska's communities.

The Finger Mountain Project provides supplemental analysis for six Value Comparison Units (VCUs) within the 1992 Southeast Chichagof Project Area. This supplemental analysis is being undertaken to meet the terms of the Settlement Agreement (filed May 16, 1996) of the lawsuit initiated by the Alaska Wilderness Recreation and Tourism Association. It is intended to supplement the analysis contained in the Final EIS and the ROD for the Southeast Chichagof project published in 1992.

Goals, objectives and desired future conditions of the land use designations within the project area are described in the next section, "Relationship to the Forest Plan."

Appendix A of this EIS provides information on how this project relates to the overall Tongass timber sale program and why the project is being scheduled at this time.

## Relationship to the Forest Plan

National forest planning takes place at several levels: national, regional, forest, and project levels. The Finger Mountain EIS is a project-level analysis; its scope is confined to addressing the significant issues and possible environmental consequences of the project. It does not attempt to address decisions made at higher levels. It does, however, implement direction provided at those higher levels.

The 1997 Forest Plan embodies the provisions of the National Forest Management Act (NFMA), its implementing regulations, and other guiding documents. It sets forth in detail the direction for managing the land and resources of the Tongass National Forest and is the result of extensive analysis, which is presented in the 1997 Forest Plan FEIS. A Forest Plan ROD was signed in 1997. A subsequent ROD superseded the 1997 Forest Plan ROD in May 1999. The Finger Mountain Timber Sale(s) Draft Environmental Impact Statement followed the direction of the 1999 Forest Plan ROD. In *AFA v. USDA*, the U.S. District Court, District of Alaska, vacated the 1999 Forest Plan ROD and upheld the 1997 Forest Plan ROD. Where appropriate, the Finger Mountain EIS tiers to the 1997 Forest Plan, as encouraged by 40 CFR 1502.20. The changes that apply to the Finger Mountain Project Area as a result of those decisions follow.

# 1

## Purpose and Need

With implementation of the 1999 Forest Plan ROD, all units located in Crab Bay (VCU 232) and Broad Creek (VCU 246) were removed from harvest consideration. These units, which were originally assigned to the Timber Production, Modified Landscape, or Scenic Viewshed land use designation (LUD) under the 1997 Forest Plan ROD, were placed within the Semi-remote Recreation LUD under the 1999 Forest Plan ROD. Once the 1999 Forest Plan ROD was vacated and the 1997 Forest Plan ROD was upheld, these units were returned to their previous land use designations.

In addition, with implementation of the 1999 Forest Plan ROD a decision was made to defer harvest in units within the Saltery Bay watershed (VCU 231) to avoid the need to construct a road through a Semi-remote Recreation Area. Access to timber in VCU 231 was originally designed using a road to be constructed through Crab Bay (VCU 232). While VCU 232 is no longer classified as a Semi-remote Recreation Area, it has been determined that the original design would not be economically feasible due to the high cost of the road relative to the small amount of timber accessed.

Under 1997 Forest Plan ROD LUDs, timber harvest is now allowable in Saltery Bay (VCU 231), Crab Bay (VCU 232), and Broad Creek (VCU 246). However, the time that would have been needed to reevaluate the potential for harvest within these areas would have exceeded the allowable timeframe for this project. These areas would be better evaluated under a separate analysis at some point in the future.

## Forest Plan Land Use Designations

The 1997 Forest Plan uses LUDs to guide management of the National Forest System lands within the Tongass. Each designation provides for a unique combination of activities, practices, and uses. The Finger Mountain Project Area includes four LUDs. Goals, objectives, and desired future conditions of each are summarized below, and their locations are shown in Figure 1-2. Table 1-1 displays acres by LUD for this project. Chapter 3 of the 1997 Forest Plan contains a detailed description of each LUD.

**Table 1 - 1**  
**Project Area Land Use Designations and Non-National Forest Acreages**

Timber Production	Modified Landscape	Old-growth Habitat	Scenic Viewshed	Other Ownership	Total Acres
57,600	2,273	11,249	1,649	9	72,780

### Timber Production

The goals of this LUD are to:

- maintain and promote industrial wood production from suitable timber lands, providing a continuous supply of wood to meet society's needs,
- manage these lands for sustained long-term timber yields, and
- seek to provide a supply of timber from the Tongass National Forest, which meets the annual and planning-cycle market demand consistent with the standards and guidelines of this designation.

Timber management objectives of this land use designation include:

- seek to reduce clearcutting when other methods will meet land management objectives,
- improve timber growth and productivity on commercial forest lands, and
- plan, inventory, prepare, offer, sell, and administer timber sales and permits to ensure the orderly development of timber production.

For Timber Production, the desired future condition includes a sustained yield of timber, healthy tree stands in a balanced mix of age classes from young stands to trees of harvestable age, and a road system providing access for timber management as well as recreation, hunting and fishing, and other public uses. Recreation opportunities associated with roaded settings are available. Wildlife habitats are predominantly in the early and middle successional stages.

## Modified Landscape

The goals of this LUD repeat the first and third goals under the Timber Production LUD and include two others:

- provide a sustained yield of timber and a mix of resource activities while minimizing the visibility of developments in the foreground distance zone, and
- recognize the scenic values of suitable timber lands viewed from identified popular roads, trails, marine travel routes, recreation sites, bays, and anchorages, and modify timber harvest practices accordingly.

Timber management objectives of the Modified Landscape land use designation are the same as those of the Timber Production LUD. The scenery objective is to apply the Partial Retention visual quality objective in the foreground distance zone and Modification visual quality objective in the remaining zones, as seen from visual priority travel routes and use areas.

For the Modified Landscape LUD, the desired future condition accepts a somewhat modified landscape but emphasizes scenic quality in foreground distance zones. Recreation opportunities associated with natural-appearing to modified settings are available. A variety of successional stages provides a range of wildlife habitat conditions.

## Scenic Viewshed

The goals of this LUD are to:

- seek to provide a supply of timber from the Tongass National Forest which meets the annual and planning-cycle market demand, consistent with the standards and guidelines of this land use designation,
- provide a sustained yield of timber and a mix of resource activities while minimizing the visibility of developments as seen from visual priority travel routes and use areas, and
- recognize the scenic values of suitable timber lands viewed from selected popular roads, trails, marine travel routes, recreation sites, bays, and anchorages, and modify timber harvest practices accordingly.

# 1 Purpose and Need

The timber management objectives of the Scenic Viewshed LUD are to:

- seek to reduce clearcutting when other methods will meet land management objectives,
- identify opportunities for diversifying the wood products industry (such as special forest products and value-added local production),
- use forest health management to protect resource values and improve timber growth and productivity on commercial forest lands,
- plan, inventory, prepare, offer, sell, and administer timber sales and permits to ensure the orderly development of timber production, and
- emphasize the overall reduction of costs, increase of revenues, and improvement of public service within the timber program.

The scenery objectives for the Scenic Viewshed LUD are to apply the visual quality objectives of Retention in the foreground distance zone and Partial Retention in the remaining zones, as seen from Visual Priority Travel Routes and Use Areas.

For the Scenic Viewshed Land Use Designation, the desired future condition emphasizes a natural-appearing landscape as viewed by users of Visual Priority Travel Routes and Use Areas. Recreation and tourism opportunities in a range of settings are available. A variety of successional stages providing wildlife habitat occur, although later successional stages predominate.

## Old-growth Habitat

The goals of this LUD are to:

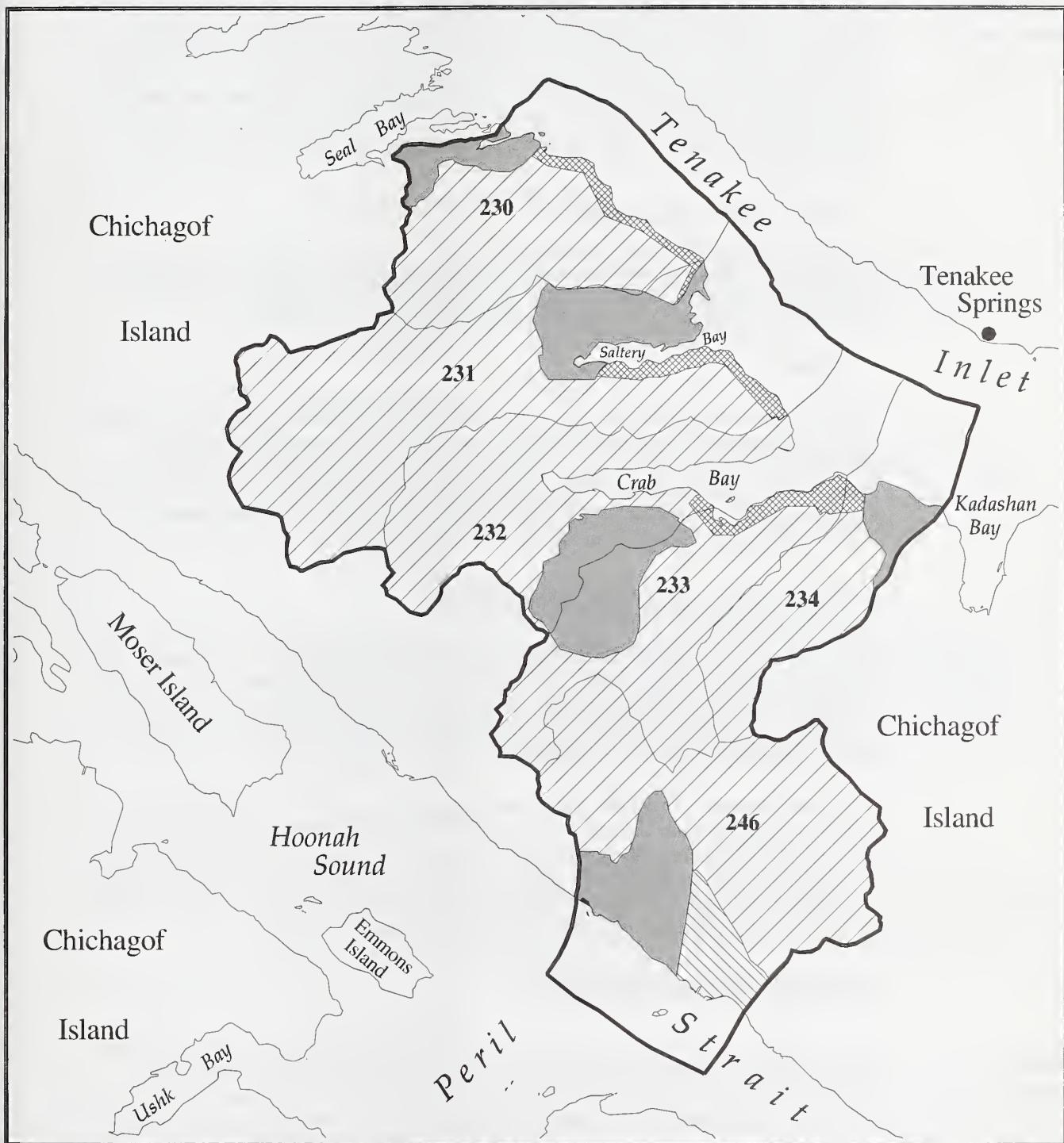
- maintain areas of old-growth forests and their associated natural ecological processes to provide habitats for old-growth associated resources, and
- manage early seral conifer stands to achieve old-growth forest characteristic structure and composition based upon site capability.

Applicable objectives of Old-growth Habitat include:

- provide old-growth forest habitats, in combination with other land use designations, to maintain viable populations of fish and wildlife species that may be closely associated with old-growth forests,
- contribute to the habitat capability of fish and wildlife resources to support sustainable human subsistence and recreational uses, and
- maintain components of flora and fauna biodiversity and ecological processes associated with old-growth forests.

For Old-growth Habitat, the desired future condition is that all forested areas attain old-growth forest characteristics and provide a diversity of old-growth habitat types, associated species, and ecological processes.

Figure 1-2  
Project Area Land Use Designation (LUD) Map



Old Growth Habitat  
 Scenic Viewshed  
 Modified Landscape  
 Timber Management  
 Salt Water

Other Ownership  
 VCU Boundary  
 Project Boundary

233 VCU Number

1 0.5 0 1 2  
 Scale in Miles



# 1 Purpose and Need

## Forest Plan Standards and Guidelines

The standards and guidelines for Beach and Estuary Fringe and Riparian Management Areas delineate geographic areas not available for programmed timber harvest within land use designations (LUDs) that are otherwise available. Each applies to a specific habitat or ecological component. These areas are included within the Modified Landscape and Timber Production LUDs described above. All other 1997 Forest Plan standards and guidelines will also be applied, where appropriate. Some of these are summarized in Chapter 2. Detailed information about these and other standards and guidelines is included in the 1997 Forest Plan, Chapter 4.

### Beach and Estuary Fringe

The beach and estuary fringe is an area of approximately 1,000 feet inland from mean high tide around all marine coastlines. Programmed timber harvest is not allowed and roads are located outside the fringe when possible (1997 Forest Plan, pp. 4-4 to 4-5).

### Riparian

Riparian Management Areas are areas of special concern to fish, other aquatic resources, and wildlife. These areas are delineated in the riparian forest-wide standards and guidelines (1997 Forest Plan, pp. 4-56 to 4-73). Some riparian boundaries may be adjusted after completion of a project-specific watershed analysis (1997 Forest Plan, p. 4-56 and Appendix J). The watershed analysis is located in the Finger Mountain Project Planning Record. Timber harvest is not scheduled in Riparian Management Areas.

## Desired Future Condition

The desired future conditions described for the 1997 Forest Plan LUDs, in conjunction with the other 1997 Forest Plan direction outlined above, provide the parameters for identifying and defining project-specific desired future conditions. The desired future conditions will help guide management of the project consistent with the 1997 Forest Plan, the significant issues (described below), and the ecological conditions of the project area.

The Finger Mountain Project will help move the project area toward the desired future conditions of the land use designations. The project proposes timber harvesting on selected suitable timber lands for the production of saw timber and other wood products to help meet market demands for timber and provide resource production opportunities and employment for local communities. Harvest is expected to improve timber growth and, within the Timber Production LUD, contribute toward a balance of age classes.

## Public Involvement

## Public Scoping

Public scoping is defined by the Council on Environmental Quality (CEQ) as "...an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action" (40 CFR 1501.7). Among other things, the scoping process is used to invite public participation, to help identify public issues, and to obtain public comment at various stages of the EIS process. Although scoping is to begin early, it is really an iterative process that continues until a decision is made.

During the scoping process for the Finger Mountain Project, we invited the participation of affected federal, state, and local agencies, federally recognized tribes, and any other interested groups and individuals. Since the Finger Mountain Project Area is a subset of the Southeast Chichagof Project Area analysis completed in 1992, scoping results from that project were also used in developing the Finger Mountain Project alternatives. In addition, numerous letters were received, contacts were made, and meetings took place as a result of the Finger Mountain scoping effort. To date, the public has been invited to participate in the project in the following ways.

## Schedule of Proposed Actions

The Tongass National Forest maintains a quarterly schedule of proposed NEPA actions for each ranger district and for multi-district proposals that is available to the public on the World Wide Web<sup>1</sup> and is mailed to individuals and groups that have requested the updates. The Finger Mountain Project was first listed on the schedule in October 1996 and has been listed on it since that time.

## Notice of Intent

A Notice of Intent (NOI) was published in the Federal Register in June 1997 when it was decided that an EIS would be completed for the project. Two additional Notices of Intent were published in July 1997 and May 1999 when changes were made to the proposed action. Each NOI included an invitation to the public to participate in the process.

## Public Mailing

In July 1997, a letter was mailed to approximately 750 individuals, state and federal agencies, and other groups disclosing preliminary issues from previous projects and requesting information on new issues for the Finger Mountain Project. A second letter was mailed later in the same month to inform people of additional units added to the analysis and seeking further public comment about significant issues related to the project. A third update was mailed in May 1999 informing people of changes made to the project as a result of the April 1999 Forest Plan ROD.

## Local News Media

Announcements about the project were printed in the *Daily Sitka Sentinel* and the *Juneau Empire* with each Notice of Intent published and were also broadcast on KCAW and KSBZ radio in Sitka. Numerous radio interviews were conducted to discuss the project. Additional public notices were printed to advertise public meetings. Flyers were posted in Tenakee Springs and Angoon to advertise meetings about the project.

## Public Meetings

In April 1997, a preliminary scoping meeting was held in Tenakee Springs to contact people who would possibly be gone later in the summer during official scoping. In July 1997, public meetings were held in Tenakee Springs and Sitka to identify issues. Another public meeting was held in September 1997 in Tenakee Springs to talk about the project in addition to the Hanus Bay Alternatives to Clearcutting study. Because of concerns raised at the meeting in Tenakee Springs, a field trip to Corner Bay was held with people from Tenakee Springs to look at regeneration in previously harvested areas. A meeting was also held in Angoon at

<sup>1</sup> Schedules of proposed NEPA actions for the Tongass National Forest are located at the following internet address: [http://www.fs.fed.us/r10/tongass/management%20news/mgmt\\_news.html#sopa](http://www.fs.fed.us/r10/tongass/management%20news/mgmt_news.html#sopa)

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that time to identify issues related to the Finger Mountain Project. In addition, public information meetings were held in Tenakee Springs and Sitka in November and December 1998 to describe the preliminary alternatives developed and to determine whether there were issues not identified or addressed. On January 24, 2000, another public meeting in Tenakee Springs was held to provide information relating to the DEIS.

### Meetings with Agencies, Native Groups, and Others

In September 1997, two review meetings were held with the Alaska Division of Governmental Coordination, Alaska Department of Fish and Game (ADF&G), Alaska Department of Environmental Coordination (ADEC), and the U.S. Fish and Wildlife Service (USFWS). In October of 2000 a meeting was held in Sitka with ADF&G to discuss their comments to the DEIS. In addition, interagency meetings were held with ADF&G and the USFWS on February 22, 1999 and April 8, 2003 to evaluate the location of small old-growth reserve designations.

Throughout the scoping period, various meetings, field trips, and written correspondence with individuals, agencies, and organizations took place. Agencies involved included ADF&G, USFWS, ADEC, the National Marine Fisheries Service (NMFS), and the Office of General Council. In addition, a representative from the USFWS was invited to be a full participant in the planning process for Finger Mountain. He was present at many of the IDT meetings defining the issues and developing the alternatives. We have maintained frequent contact to keep the USFWS updated on our progress and to make sure we are addressing their concerns.

### Subsistence Hearings

A subsistence hearing was held May 15, 2003 in Tenakee Springs, AK. Transcribed notes of all testimony are located in the Project Record.

### Federally Recognized Tribes

On April 24, 2001, the Forest Service and the Sitka Tribe of Alaska (STA) entered into a Memorandum of Understanding (MOU) to establish a framework for cooperative relationships between the Forest Service and the Sitka Tribe of Alaska "for carrying out the unique relationship and obligations the United States Government has with Indian Tribal Governments. This shall serve as a vehicle through which the Forest Service maintains a legal and political relationship with the local tribal government in Sitka."

In keeping with the spirit of the MOU, the Interdisciplinary Team has made a diligent effort to maintain and strengthen the Forest Service's working relationship with STA throughout planning for this project. We attended tribal council meetings once a month to update them on our project as well as other district projects.

The Angoon Community Association (ACA) was also consulted during the planning phases of this project. The ACA was invited to attend an open house conducted by the Forest Service in Angoon in August 1997. More recently, in June 2002 the ACA was contacted by phone to determine whether it had any interest in consultation on the Finger Mountain Timber Sale(s) Project. The ACA expressed no further interest in consultation at that time.

### Comments on the Draft EIS

Availability of the Draft EIS was announced in the Federal Register and through notices in local papers. These notices started a 45-day comment period. DEIS documents were also mailed to federal and state agencies, Alaska Native and municipal offices, and to anyone else

who requested them (see the Distribution List in Chapter 4). Written comments from individuals, public agencies, and private organizations were received during the DEIS comment period. Appendix D includes copies of letters received on the Draft EIS with substantive comments and Forest Service responses to those comments.

## Issues

### Significant Issues

Significant issues for the Finger Mountain Project were identified through public and internal scoping. Similar issues were combined into one statement where appropriate. The following five issues were determined to be significant and within the scope of the project decision. These issues are addressed through the proposed action and alternatives. Additional concerns were considered but determined not to be significant for the project decisions to be made; they are discussed separately below.

#### **Issue 1. Old-growth associated wildlife**

The Finger Mountain Timber Sale(s), as proposed, will harvest timber from old-growth forest. In addition, roads will be constructed to provide access to timber harvest units. Logging and road building will decrease the amount of forest exhibiting old-growth conditions. Several animal species, including Sitka black-tailed deer, brown bear, marten, and northern goshawk, are associated with old-growth forested conditions. Many people are concerned that the decrease in old-growth forest resulting from this project, alone and in combination with past and future projects, will have a negative impact on these animal species.

This issue is comprised of the following sub-issues:

- 1-1: The amount and type of timber harvest may decrease habitat for old-growth-associated wildlife;
- 1-2: Old-growth connectivity, important for wildlife movement, may be negatively affected by timber harvesting and road building; and
- 1-3: High-value deer winter range may be affected by timber harvest.

#### **Issue 2. Subsistence opportunities**

Rural residents of Southeast Alaska use the National Forest for a variety of activities, including hunting, fishing, trapping, and gathering. Subsistence is the primary source of food for some people and supplements the diets of many more. Moreover, subsistence preserves cultural customs and traditions for Native people in Southeast Alaska. People in Southeast Alaska strongly value the subsistence lifestyle. Timber harvest and road building may impact subsistence opportunities through changes in the abundance of, access to, and/or competition for subsistence resources.

This issue is comprised of the following sub-issues:

- 2-1: Abundance of deer may decrease for people in Tenakee Springs as a result of harvest near Crab Bay and Inbetween and
- 2-2: Access to, and competition for deer may increase as a result of road building and the introduction of logging camps.

#### **Issue 3. Scenic resources and recreation experiences**

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Management of forested lands for timber production may detract from the wild, undeveloped, and scenic nature of the landscape. Many people live in Southeast Alaska because the landscape appears pristine and provides for recreation opportunities that are not as available in other places. Tourists come here to see “the last frontier,” which, to them, means large, uninterrupted areas of natural looking forests, absent of clearcuts and logging roads. In addition, the people of Tenakee Springs who work as outfitters/guides or are otherwise associated with the tourism industry have an economic interest in this issue. Scenic resources and recreation experiences may be affected by the timber harvest and road construction associated with this project.

The scenic resources and recreation experiences issue is comprised of the following sub-issues:

- 3-1: The amount and type of timber harvest and the placement of harvest units may decrease scenic resources in Tenakee Springs and throughout Tenakee Inlet, including the anchorages in Crab Bay and Saltery Bay;
- 3-2: New roads may be visible from the main travel routes;
- 3-3: Heavily used recreation areas in Crab Bay and Saltery Bay may be affected by visible timber harvest and logging activity; and
- 3-4: Less developed recreation places may be changed by timber harvest and road building so that they no longer provide the same recreation experience.

## **Issue 4. Log transfer facilities, camps, and the marine environment**

Harvesting timber from National Forest System lands in Southeast Alaska usually requires LTFs to transfer logs from trucks to saltwater bays, where the logs are then rafted or bundled for transport to mills. In addition, temporary logging camps are often established to allow loggers access to timber harvest areas. The introduction of industrial logging operations, logs, and “commuter” boat traffic alters, to some degree, the nature of the marine environment and seascape. These effects may be more pronounced if the LTF(s) at Crab Bay and Inbetween are active at the same time as the reconstructed LTF planned for the Indian River Timber Sale on the north shore of Tenakee Inlet. LTFs and camps associated with the Finger Mountain Timber Sale(s) may impact the marine environment.

This issue is comprised of the following sub-issues:

- 4-1: The number, type, and placement of LTFs may negatively impact habitat for shellfish and herring and
- 4-2: The number, type, and placement of LTFs and camps may negatively impact scenic resources viewed from across Tenakee Inlet.

## **Issue 5. Economic opportunities for small-scale timber operators**

Many people told us that small timber operators do not have a chance of competing for timber sale contracts of the scale of those offered by the Forest Service in the past. Large harvest units require the successful bidder to invest a substantial amount of capital in yarding equipment that is priced beyond the reach of most small operators. By emphasizing large units and large sales in this project, we may be limiting our ability to provide small sales, thereby limiting economic opportunities for small-scale timber operators.

## **Other Issues and Concerns**

In addition to the significant issues described above, members of the public raised many other concerns during the scoping period. As required by the National Environmental Policy Act

(NEPA), the Responsible Official determined which issues were significant and which were not (40 CFR 1501.7(3)). Examples of non-significant issues include those that are:

- outside the scope of the proposed action,
- already decided (e.g., by law or the Forest Plan),
- irrelevant to the decision,
- not supported by scientific evidence, or
- limited in extent, duration, or intensity.

Six of these non-significant issues are described below. For some of them, the projected effects of the alternatives will be described in Chapter 3 to the same extent that they would be if the issues were driving an alternative. However, there will be no effects analysis in the case of issues outside the scope of the project.

### Water Quality and Fish Habitat

The streams and lakes in the project area provide spawning and rearing habitat for many species of anadromous and resident fish, including pink, chum, and coho salmon, steelhead, Dolly Varden char, and cutthroat trout. Commercial, sport, and subsistence fisheries depend on continued production of these fish from this area. In EISs for past timber sales on the Forest (including the Alaska Pulp Corporation Long-Term Timber Sale Contract - Southeast Chichagof Project Area FEIS [1992a]), water quality and fish habitat have been consistently identified as significant issues in developing alternatives.

The comments we received pertaining to these related issues were general concerns about how we treat streams throughout the project area. Some of the more specific comments focused on potential effects on spawning habitat at the head of Saltery Bay. With the 1997 Forest Plan, the standards and guidelines and Best Management Practices (BMPs) concerning the management of anadromous fish habitat are more rigorous and comprehensive than ever. Full implementation of these standards and guidelines and BMPs are designed to reduce the production and delivery of sediment to fish-bearing streams and generally to minimize the effects of road construction and timber harvest on water quality and fish habitat. A few of the most significant changes in protection measures as a result of the 1997 Forest Plan for water quality and fish habitat are described here (see Chapter 3 for a more thorough discussion):

- riparian buffers are wider and more abundant than in the past,
- riparian buffer widths are tied to functional stream processes,
- riparian buffers are designed to be more windfirm than in the past,
- guidelines for timber harvest on steep slopes are more rigorous and conservative than before, and
- guidelines for road construction and maintenance at stream crossings are more rigorous.

We do not claim that the project will have no impacts on water quality and fish habitat, and we will evaluate these effects by alternative in Chapter 3. However, based on input from fisheries biologists, soil scientists, and hydrologists, all alternatives are designed to maintain water quality and protect fish habitat within acceptable low-risk levels. We do not anticipate the project having a significant impact.

### Financial Efficiency of Timber Harvests

Financial efficiency, or the cost of this timber sale relative to the revenue it generates, is an issue to many people. Taxpayers are concerned when it appears that the government is losing money on timber sales or “subsidizing” the timber industry. Issues of Forest Service policy, including purchaser road credits and how we account for payments of a portion of timber receipts to local communities, are also of concern to many people. Most of these concerns go far beyond the scope of the proposed action in the Finger Mountain Project Area. However, the degree to which a timber sale is financially efficient is an important consideration to the decision-maker.

We evaluate all alternatives in terms of financial efficiency in Chapter 3.

## Market Demand for Timber

Recent changes in the structure of the timber industry in Alaska, specifically the pulp mill closures in Sitka and Ketchikan, have changed the existing market demand for Alaskan timber. During scoping, many people expressed concern that these changes eliminated the need for timber sales of the size and scope of the Finger Mountain Timber Sale(s) proposed action.

As stated under the Purpose and Need, the Finger Mountain Timber Sale(s) is proposed, in part, to meet existing and potential market demand for wood products. Although the maximum amount of timber that could be harvested during the first decade of 1997 Forest Plan implementation is an average of 267 MMBF per year, a level of 151 MMBF or less is more likely to be offered over the next few years given current market conditions and the transition that both the timber industry and the Forest Service is experiencing (see Appendix A). These projections represent a considerable decrease over the estimated average annual derived demand of 414 MMBF for the period 1988-1992. However, it is clear from this report that there remains a substantial market demand for timber from Alaska's National Forest system land.

This market demand is regional in scale. Except in the case of very small sales where the market would be determined by a limited number of small local operators, a timber sale such as the Finger Mountain Timber Sale(s) should not be evaluated for its response, individually, to market demand. The best indicator that a sale is responding to market demand may be whether it is sold. For these reasons, market demand was not considered a significant issue. (Refer to Appendix A for a complete discussion of market demand and how this project contributes to the wood supply.)

### **Clearcutting**

During scoping, many people asked that we not propose any clearcutting in the Finger Mountain Project Area. Some Sitka residents were particularly concerned insofar as VCU 246 (encompassing the Broad Creek and Broad Finger Creek drainages) falls within the “Sitka Local Use Area,” as defined by ballot propositions on clearcutting put before Sitka voters in 1995 and in 1997.

The application of the clearcutting silvicultural system to the forests of Southeast Alaska is guided by laws, regulations, and policies, as well as the capabilities of the forests and their environment. In this project, we limit clearcutting to areas where it is essential to meet 1997 Forest Plan objectives; to minimize the occurrence of disease infestations, windthrow, or logging damage; and to provide for the establishment and growth of desired trees (Sitka spruce in particular) that are shade intolerant. Eliminating clearcutting as a harvest option would severely limit the project’s ability to meet 1997 Forest Plan objectives. As a result, eliminating clearcutting is beyond the scope of this project.

### **Property Values**

Some residents of Tenakee Springs expressed concern that timber harvesting and road construction associated with this project would bring about a decrease in property values in Tenakee Springs. We evaluated this assertion and found no scientific evidence supporting it. A brief discussion of property values and timber harvest is included in Chapter 3.

### **Roadless Character**

About 92% of the project area is within the 545,420-acre Chichagof Roadless Area (Tongass Land Management Plan Revision [2003 Forest Plan Revision]). Portions of this roadless area have already been developed in areas along Inbetween Creek, Saltery Bay, Crab Bay, and Fog Bay. The project area portion of the roadless area is a naturally fragmented mosaic of timber, muskeg, and subalpine vegetative types.

Proposed road building activities could change the recreation use patterns of areas within the project area by facilitating access to them. Proposed harvest activities could also affect future opportunities to designate this portion of the Chichagof Roadless Area under a non-development land use designation.

The Roadless Area Conservation, Final Rule (Roadless Rule), was signed by the Secretary of Agriculture on January 12, 2001. This rule generally established prohibitions on road construction, road reconstruction, and timber harvest in inventoried roadless areas on National Forest System lands. Currently the Roadless Rule is in effect and is the subject of a number of lawsuits. The Department of Agriculture and the Department of Justice have entered into an agreement with the state of Alaska (signed 6/10/03) settling the state’s lawsuit challenging the applicability of the Roadless Rule in Alaska. The Department of Agriculture committed to publishing for comment a proposed amendment to the Roadless Rule that excludes the Tongass National Forest. Publication of this proposed amendment is scheduled for the end of June 2003 and includes a public comment period. The Department made no representation regarding the content or substance of any final amendment to the Roadless Rule that may result.

In addition, the Tongass National Forest has prepared a Supplemental Environmental Impact Statement (SEIS) by order of Alaska District Court Judge Singleton in response to an appeal of the 1997 Forest Plan in which the Forest Service was found to “have not considered the effects of implementation on the wilderness characteristics of roadless areas.” The

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supplemental environmental impact statement was completed, with notice in the Federal Register on March 7, 2003. Additional analysis on the effects to the roadless character of the area has been completed. A summary of this analysis is found in the Roadless Areas section of Chapter 3 in this FEIS.

Projects for which a Notice of Availability of the Draft Environmental Impact Statement was published prior to implementation of the Roadless Rule (01/12/02) can proceed now that the SEIS has been completed (i.e., Woodpecker, Madan, Finger Mountain, Emerald Bay, and Cholmondeley).

## Other Issues Not Addressed in Detail

In addition to the issues identified above, we also analyzed the effects of the alternatives on other relevant resources, including wetlands; hydrologic condition (water yields); soil stability and productivity; threatened, endangered, and sensitive plant and animal species; management indicator species; biodiversity; heritage resources; and karst and caves. These resources will be described briefly in Chapter 3.

# Legislation and Executive Orders Related to this EIS

Below is a partial list of laws pertaining to project specific planning and environmental analysis on federal lands. Some of these laws are specific to Alaska, while others pertain to all federal lands.

- Bald and Golden Eagle Protection Act, 1940 (as amended)
- Multiple Use Sustained-Yield Act of 1960
- National Historic Preservation Act of 1966 (as amended)
- Wild and Scenic Rivers Act of 1968 (amended 1986)
- National Environmental Policy Act (NEPA) of 1969 (as amended)
- Clean Air Act of 1970 (as amended)
- Alaska Native Claims Settlement Act (ANSCA) of 1971
- Marine Mammal Protection Act of 1972
- Endangered Species Act of 1973 (as amended)
- Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974 (as amended)
- National Forest Management Act (NFMA) of 1976 (as amended)
- Clean Water Act of 1977 (as amended)
- American Indian Religious Freedom Act of 1978
- Alaska National Interest Lands Conservation Act (ANILCA) of 1980
- Archeological Resources Protection Act of 1979
- Cave Resources Protection Act of 1988
- Native American Graves Protection and Repatriation Act (NAGPRA) of 1990
- Tongass Timber Reform Act (TTRA) of 1990
- Magnuson-Stevens Fishery Conservation and Management Act of 1996
- Executive Order 11593 (cultural)
- Executive Order 11988 (floodplains)
- Executive Order 12898 (environmental justice)
- Executive Order 11990 (wetlands)
- Executive Order 12962 (aquatic systems and recreational fisheries)

In addition, the Coastal Zone Management Act (CZMA) of 1976, as amended, pertains to the preparation of an EIS. Federal lands are not included in the definition of the coastal zone as prescribed in the CZMA. However, when federal agencies conduct activities or propose development affecting the coastal zone, the Act requires that the activities or development be consistent to the maximum extent practicable with the approved State Coastal Management Program. The Forest Service makes this determination.

The Alaska Coastal Management Plan incorporated the Alaska Forest Resources and Practices Act of 1979 (as amended) standards and guidelines for timber harvesting and processing. The Forest Service standards and guidelines and mitigation measures described in Chapters 2 and 3 of this document are equal to or exceed state standards.

## **Federal and State Permits, Licenses, and Certifications**

To proceed with the timber harvest as proposed in this Final EIS, various permits must be obtained from federal and state agencies. The agencies and their responsibilities are listed below.

### **U.S. Coast Guard**

- Coast Guard Bridge Permit (in accordance with the General Bridge Act of 1946) required for all structures constructed within the tidal influence zone

### **U.S. Army Corps of Engineers**

- Approval of discharge of dredged or fill material into waters of the United States (Section 404 of the Clean Water Act of 1977, as amended)
- Approval of construction of structures or work in navigable waters of the United States (Section 10 of the Rivers and Harbors Act of 1899)

### **U.S. Environmental Protection Agency**

- Storm water discharge permit
- National Pollutant Discharge Elimination System review (Section 402 of the Clean Water Act)

### **State of Alaska, Department of Natural Resources**

- Authorization for occupancy and use of tidelands and submerged lands

### **State of Alaska, Department of Environmental Conservation**

- Certification of compliance with Alaska Water Quality Standards (Section 401 Certification)
- Solid Waste Disposal Permit (Section 402 of the Clean Water Act)

## **Availability of the Planning Record**

An important consideration in preparation of this EIS has been the reduction of paperwork as specified in 40 CFR 1500.4. In general, the objective is to furnish enough site-specific

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information to demonstrate a reasoned consideration of the environmental impacts of the alternatives and how these impacts can be mitigated.

The planning record is available upon issuance of this EIS and is located at the Sitka Ranger District office in Sitka, Alaska. Other reference documents such as the 1997 Forest Plan, the Tongass Timber Reform Act, and the Resources Planning Act are available at public libraries around the region as well as at the Forest Supervisor's Offices in Ketchikan, Petersburg, and Sitka. The 1997 Forest Plan is also available on the Internet (<http://www.fs.fed.us/r10/WELCOME.PDF>) and on CD-ROM.

# **Chapter 2**

## **Alternatives**

# Keywords

# Chapter 2

## Alternatives

### Introduction

This chapter describes and compares the alternatives considered by the Forest Service for the Finger Mountain Timber Sale(s) Project. It includes a discussion of how alternatives were developed and an overview of mitigation measures, monitoring, and other features common to all alternatives. It also includes a description of each alternative considered in detail and a comparison of these alternatives focusing on the significant issues. Alternative B is identified as the preferred alternative. Chapter 2 is intended to present the alternatives in comparative form, sharply defining the issues and providing a clear basis for choice among options by the decision-maker for the public (40 CFR 1502.14).

Some of the information used to compare alternatives at the end of Chapter 2 is summarized from Chapter 3, "Environment and Effects." Chapter 3 contains the detailed scientific basis for establishing baselines and measuring the potential environmental consequences of each of the alternatives. For a full understanding of the effects of the alternatives, readers will need to consult Chapter 3.

### Alternative Development Process

The Finger Mountain Project Area (72,780 acres) is within the larger Southeast Chichagof environmental analysis area described in Chapter 1. The Southeast Chichagof area included 260,048 acres that were analyzed for timber harvest. The Southeast Chichagof FEIS and Record of Decision (ROD), signed in September 1992, documented that analysis and the decision(s) made.

#### Landscape Analysis

In order to synthesize various resource conditions, objectives, and opportunities, an interdisciplinary team (IDT) conducted a landscape analysis in 1996 of the entire Southeast Chichagof planning area. During the landscape analysis, the team identified preliminary issues and evaluated effects on those issues based on site-specific conditions and trends on the entire peninsula. It included a summary of information about the biodiversity, landscape, ecological/geological characterization, forest vegetation, old-growth diversity, wildlife habitat, riparian and aquatic habitat, and human use of the area. With this information, the interdisciplinary team identified important areas in which to consider postponing, reducing, or modifying harvest to maintain the function of these areas. This information was used as the first step in identifying potential harvest areas and was also used extensively in discussing cumulative impacts.

#### Proposed Action

The unit pool for the Finger Mountain Project was initially composed of those units analyzed in the Southeast Chichagof EIS that were located within the Finger Mountain Project Area. This included all suitable commercial forest lands (under the 1979 Tongass Land Management Plan [TLMP]) that could be harvested using cable yarding systems. This preliminary harvest unit pool included 7,493 acres in 217 potential units. Unit boundaries were adjusted based on interdisciplinary team recommendations and 1997 Forest Plan direction. This reduced the harvest unit pool to 5,723 acres in 213 potential units. The unit pool was later expanded by approximately 315 acres (10 units) to include helicopter access units in the Broad Creek (Value Comparison Unit [VCU] 246), South Crab Bay (VCU 233),

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and Fog Creek (VCU 234) watersheds. These units were added in an attempt to reduce clearcutting in areas where potentially viable sales could be considered using helicopters and selection harvest methods.

Based on short- and long-term landscape or resource objectives, the interdisciplinary team assigned preliminary timber harvest prescriptions for each potential harvest unit. The team then evaluated this unit pool and the roads deemed essential for resource management that would access these units. This pool of units was also used for public scoping for the project. The “proposed action” presented during scoping was a subset of the unit pool that was developed in the ROD for the Southeast Chichagof FEIS.

We validated, modified, dropped and/or deferred potential harvest units based on findings of field investigations. Modifications were made as needed to meet 1997 Forest Plan standards and guidelines. For instance, if we discovered a previously unknown stream, we applied the Riparian forest-wide standards and guidelines. Some units were adjusted to have boundaries that are more logical or to facilitate logging systems, and some were expanded to prevent isolating timber stands from future harvest. This effort led to the current unit pool, 2,165 acres and 93 units, from which we developed the proposed action and all action alternatives. Site-specific descriptions and resource considerations for each potential harvest unit are documented in the unit cards located in Appendix B of this EIS. Proposed road access and management are described in the road cards in Appendix C.

### Development of Alternatives

The interdisciplinary team used information from public scoping, including the significant issues identified for the project (see Chapter 1), in conjunction with the field-verified pool of units, and related resource information such as that contained in the Southeast Chichagof Landscape Analysis (Shephard and others 1999), to formulate different alternative themes. Based on these themes, we then assigned potential harvest units to each to create the various alternatives.

Alternatives were modified during the development process to respond to and comply with changing regulation. As discussed in detail in Chapter 1, this project was begun under the 1997 Forest Plan ROD. In 1999, a new Forest Plan ROD was signed, replacing the 1997 ROD. Due to this change, it was necessary to modify the alternatives as they were originally developed. Some areas originally identified as potential harvest units became unavailable for timber harvest activities. The action alternatives presented in the Finger Mountain Timber Sale(s) Draft EIS reflected such modifications. Since the time of publication of the Draft EIS, the Forest Service has been ordered by the U.S. District Court, District Court of Alaska, to vacate the 1999 Forest Plan ROD and uphold the 1997 ROD. However, the alternatives analyzed in the Draft EIS were not further modified in response to this change because they fully comply with the 1997 Forest Plan ROD.

The proposed action and each action alternative presented in this EIS provide different responses to the significant issues. The alternatives represent site-specific proposals developed through intensive interdisciplinary evaluation of timber harvest unit and road design based on high-resolution photos, data stored in our geographic information system (GIS), and field verification. In addition, each action alternative is designed to meet the stated purpose and need for the Finger Mountain Project and the project-specific desired future conditions.

## Changes between Draft EIS and Final EIS

### New Information

Additional National Policy and site-specific information about the Finger Mountain Project has become available since the publication of the Draft EIS. Sources and types of new information include the following.

#### The Roadless Area Conservation Rule

The Roadless Area Conservation Final Rule (Roadless Rule) was signed by the Secretary of Agriculture on January 12, 2001. This rule generally established prohibitions on road construction, road reconstruction, and timber harvest in inventoried roadless areas on National Forest System lands. The Finger Mountain Project meets the transition criteria included in the Roadless Rule, which allow projects on the Tongass National Forest to continue if the Notice of Availability for their Draft Environmental Impact Statement was published in the Federal Register prior to January 12, 2001. A Notice of Availability for the Draft Environmental Impact Statement for the Finger Mountain Timber Sale(s) was issued in January 2000.

Currently the Roadless Rule is in effect and is the subject of a number of lawsuits. The Department of Agriculture and the Department of Justice have entered into an agreement with the state of Alaska (signed 6/10/03) settling the state's lawsuit challenging the applicability of the Roadless Rule in Alaska. The Department of Agriculture committed to publishing for comment a proposed amendment to the Roadless Rule that excludes the Tongass National Forest. Publication of this proposed amendment is scheduled for the end of June 2003 and includes a public comment period. The Department made no representation regarding the content or substance of any final amendment to the Roadless Rule that may result.

On March 30, 2001, pursuant to *Sierra Club v. Lyons* (J00-009 (CV)), the US District Court, District of Alaska enjoined the Tongass National Forest from taking any action to change the wilderness character of any eligible roadless area until a supplemental environmental impact statement evaluating wilderness recommendations for roadless areas had been prepared. The supplemental environmental impact statement was completed, with notice in the Federal Register on March 7, 2003. Additional analysis on the effects to the roadless character of the area has been completed, and a summary is found in the Roadless Areas section of Chapter 3 in this Final EIS.

#### Road Condition Survey Cards

In addition, after publishing the DEIS, additional road surveys were completed to gather information on stream crossing sites on all existing roads and most proposed roads in this area. This addressed the need for site-specific information to be displayed in the Final EIS. During field surveys, all stream crossings were noted. Many of these additional stream crossing sites are smaller Class I and II streams that are not depicted on the road card maps, which primarily show larger streams or crossings (aerial photo interpretable) by numbers. Smaller stream crossings are not displayed on the maps because it is difficult to accurately locate them on the larger scale maps used in the EIS document. We placed surveyed milepost distances in parentheses with numbers for all crossings shown on the maps. The smaller stream crossing sites that are not depicted on the road card maps have the milepost distance displayed on the road cards along with specific crossing information in the tables. The Habitat Division of the Alaska Department of Fish and Game and the Alaska Department of Environmental Conservation were consulted on this approach, and both concurred that there is no need to show the location of all smaller stream crossing sites on the road maps, as long as the crossing information is displayed in the tables. Stream crossings are listed by milepost

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and in order of occurrence in the road card tables. The relative location of the smaller crossings can be determined by the position of such crossings between those stream crossing sites displayed on the maps.

### Public Input

Public input on the Finger Mountain Project included:

- written comment letters,
- information obtained at access management meetings and interagency meetings, and
- ANILCA subsistence hearing testimony.

New information and public input are reflected in revisions to the text and tables in many sections of the Final EIS. Edits intended to further clarify alternatives were made in Chapter 2 under Alternatives Eliminated from Detail Study. Further clarification was added to the CCC Alternative. A new alternative, Alternative H, was added to address the issue of smaller sales. The following appendices were added: 1) Appendix D, Response to Comments and 2) Appendix E, Project Specific Mitigation Measures. Major revisions are described below by resource area.

#### **Biodiversity and Old-growth**

- strengthened discussion of environmental and cumulative effects in chapter 3,
- added coarse canopy analysis, and
- strengthened population viability analysis.

#### **Management Indicator Species and Endemic Terrestrial Mammals**

- strengthened discussion of environmental and cumulative effects in chapter 3,
- updated MIS discussion to include all MIS,
- used current habitat model for Sitka black-tailed deer analysis, and
- strengthened analysis for cavity dependent species.

#### **Threatened, Endangered, Proposed, Petitioned, and Sensitive Species**

- strengthened discussion of environmental and cumulative effects in chapter 3,
- updated discussion to include all Threatened, Endangered, Proposed, Petitioned, and Sensitive Species,
- updated sensitive plant analysis, and
- analyzed effects to petitioned species (kittlitz's murrelet).

#### **Water, Soil, and Fish**

- updated GIS layers and unit and road cards with additional information from field and road condition surveys where appropriate,
- strengthened discussions of current condition and environmental effects in Chapter 3,
- updated fisheries resource report to include updated stream and road condition, and surveys, a discussion of essential fish habitat (EFH), and a discussion of cumulative effects.

#### **Silviculture and Timber Management**

- strengthened discussions of the current condition and environmental effects in Chapter 3,
- clarified prescriptions on unit cards,

- revised the financial efficiency analysis in Chapter 3,
- incorporated updated Forest Service Handbook direction, unit and road information, and data generated by the NEPA Economic Analysis Tool (NEAT), and
- revised Appendix A to include latest demand and supply information.

### **Transportation and Facilities**

- revised the access management plan and updated the discussion in Chapter 3,
- strengthened the discussion of log transfer facilities (LTFs) in Chapter 3,
- strengthened discussions of current conditions and environmental effects in Chapter 3, including the marine environment and LTFs,
- strengthened discussion of cumulative effects in Chapter 3, and
- updated road cards to reflect recent surveys that revealed additional stream crossings.

### **Subsistence**

- strengthened discussion of environmental and cumulative effects in chapter 3, and
- held an ANILCA 810 Subsistence Hearing in Tenakee Springs, Alaska.

### **Roadless Areas**

- included updated information and strengthened discussions of current condition and environmental effects in Chapter 3 using the SEIS roadless inventory.

## **Items Common to All Alternatives**

All action alternatives including the proposed action are consistent with the 1997 Forest Plan. All applicable forest-wide and land use designation (LUD) standards and guidelines are incorporated. The Forest Service uses many mitigation and preventive measures in the planning and implementation of land management activities. The application of these measures begins during the planning and design phases of a project. Additional direction comes from applicable Forest Service manuals and handbooks.

The following items are listed to highlight some of the key direction from the 1997 Forest Plan (primarily from Chapter 4, Forest-wide Standards and Guidelines). See also the next section, Project-specific Mitigation, and the unit cards and road cards in Appendices B and C.

### **Forest Plan Standards and Guidelines**

#### **Biodiversity and Old-growth**

Each alternative complies with the 1997 Forest Plan habitat conservation strategy designed to ensure well-distributed, viable populations of wildlife. The small old-growth habitat reserves (the Old-growth Habitat LUD or OGR) mapped in the 1997 Forest Plan FEIS that are within VCUs in which timber harvest and/or new road construction is proposed have been evaluated for size, spacing, and habitat composition.

#### **Fish and Marine Habitats**

Standards and guidelines for riparian areas contained within the 1997 Forest Plan apply to all fish streams within the project area and to non-fish-bearing Class III and IV streams.

## 2 Alternatives

Stream analysis for the project included landscape and site-level considerations. No opportunities were identified for adjusting Riparian Management Area boundaries.

Road cards note applicable BMPs and fish passage needs. Examples include applying timing restrictions for in-stream activities or using larger-than-normal culverts or bridges.

The LTF site near the mouth of Crab Bay was used previously as a low-angle slide. We propose to reconstruct that slide in several alternatives or to construct and use a barge facility as in Alternative B. The site at Inbetween Creek would be a new drive-down ramp facility located near the site of the previously used facility. The location of the new site meets the guidelines described in the 1997 Forest Plan, Appendix G. This LTF would be removed following the timber sale. Mitigation measures for the timing of operations were added to protect herring spawn.

### **Karst Resources**

All activities have been designed to avoid high vulnerability karst and to meet 1997 Forest Plan standards and guidelines for low and moderate vulnerability areas.

### **Heritage Resources**

Areas considered as having a high probability of containing heritage resources (historical and archaeological sites) have been intensively surveyed by heritage resource specialists. All identified heritage sites have been, or would be, avoided. All proposed alternatives have received concurrence from the State Historic Preservation Officer (SHPO) regarding our determination that no sites eligible for the National Register of Historic Places or Properties will be affected by the proposed timber sale and associated facilities.

### **Scenery**

Areas within the viewshed of a priority travel route or use area as identified in the 1997 Forest Plan, if retained in the timber-suitable land base, have been allocated to the Modified Landscape LUD in the 1997 Forest Plan. Units within these areas have been designed to meet the visual quality objectives of that designation. Priority travel routes for the Finger Mountain Project Area are described in Chapter 3.

### **Soils, Water Quality, and Wetlands**

Potential harvest units with slopes greater than 72 percent have received an on-site analysis for slope and stream channel stability, and an assessment of potential downstream effects on fish and water quality. Areas with a high level of risk were deleted from the unit pool. Harvest prescriptions in the steepest remaining units have been changed to individual tree selection with reserve areas; this would maintain sufficient root strength to reduce risk of landslides to these sites.

Road locations either avoid slopes greater than 67 percent, unstable areas, and slide-prone areas, or are designed to minimize the risk of surface erosion and landslides. Locations also avoid wetlands where possible. Where this is not possible, roads would be designed to minimize effects on wetlands.

### Subsistence

All alternatives have been evaluated and comply with ANILCA, Title VIII, Section 810.

### Threatened, Endangered, and Sensitive Species

Biological assessments for any threatened or endangered species potentially inhabiting the project area have been completed and submitted to the responsible Federal agencies. Standards and guidelines have been applied as needed to ensure that any listed species or its habitat would not be adversely affected.

Biological evaluations for all sensitive species potentially inhabiting the project area have been completed. The 1997 Forest Plan contains standards and guidelines for each designated sensitive species; these are incorporated into the project as applicable.

### Timber Harvesting

Harvest systems other than clearcutting are prescribed for 78 to 97 percent of the harvest units, depending on the alternative. Risks from windthrow have been evaluated in all harvest units that contain stream buffers. Methods have been incorporated into all harvest unit prescriptions to minimize windthrow in the riparian buffers where potential risk is high.

### Wildlife Habitat

The 1997 Forest Plan conservation biology strategy, including all species-specific standards and guidelines, is considered sufficient to maintain habitat for viable populations for all species potentially within the project area, including terrestrial mammals unique to the area.

Deer winter range is addressed in the 1997 Forest Plan and requires 1,000 foot beach and estuary fringes, maintenance of Old-growth Habitat in non-development LUDs (48 percent of project area is in the Old-growth Habitat LUD), and other no-harvest areas, such as stream buffers and riparian management areas.

The project area is located in a higher risk biogeographic province for American marten (Forest Plan FEIS 1997, pp. 3-13 to 3-17). All proposed harvest prescriptions meet the 1997 Forest Plan standards and guidelines for marten habitat. These require leaving 10 to 20 percent of the original stand structure including four large live trees and three large decadent trees per acre in the high-value marten habitat within units.

### Project-specific Mitigation

The analysis documented in this EIS discloses the possible adverse impacts that may occur from implementing the actions proposed under each alternative. Measures have been formulated to mitigate or reduce these impacts. These measures were guided by direction from the 1997 Forest Plan previously described in this chapter and in Chapter 1. A summary by unit and road is found in Appendix E.

We used on-the-ground inventories, computer (GIS) data, and aerial photographs to prepare unit cards for each harvest unit proposed for cutting in the unit pool for the project. Cards are also prepared for each segment of road. Resource specialists include their concerns on the cards and then describe how the concerns can be addressed in the design of each unit and road segment. Unit and road cards may be found in Appendices B and C. Resource concerns and mitigation measures would be refined further during final unit and road layout, when specialists have one more opportunity to revise their unit and road card recommendations.

## 2 Alternatives

Applicable 1997 Forest Plan standards and guidelines, the Best Management Practices (BMPs) used to meet the requirements of the Clean Water Act, and project-specific mitigation measures are identified on the harvest unit and road cards.

### Monitoring

Monitoring activities can be divided into forest plan monitoring and project-specific monitoring. The National Forest Management Act requires that National Forests monitor and evaluate their forest plans (36 CFR 219.11). Chapter 6 of the 1997 Forest Plan includes the monitoring and evaluation activities to be conducted as part of forest plan implementation. There are three categories of forest plan monitoring:

- **Implementation Monitoring** - Implementation monitoring is used to determine whether the goals, objectives, standards and guidelines, and practices of the forest plan are implemented in accordance with the Forest Plan.
- **Effectiveness Monitoring** - Effectiveness monitoring is used to determine whether the forest plan standards and guidelines, and practices, as designed and implemented, are effective in achieving the desired result.
- **Validation Monitoring** - Validation monitoring is used to determine whether the data, assumptions, and estimated effects used in developing the forest plan are correct.

Effectiveness and validation monitoring are not typically undertaken as part of project implementation. Implementation monitoring, however, and any additional project-specific monitoring are important aspects of the project.

#### **Implementation Monitoring**

Implementation monitoring assesses whether the project was implemented as designed and whether or not it complies with the forest plan. Planning for routine implementation monitoring began with the preliminary design of harvest units and roads. The unit and road cards (Appendices B and C), and unit silvicultural prescriptions will be the basis for determining whether recommendations were implemented for various aspects of the Finger Mountain Project.

Routine implementation monitoring is part of the timber pre-sale and sale administration work done by the Forest Service. Pre-sale foresters and road layout engineers ensure that the prescriptions contained on the unit and road cards and the unit silvicultural prescriptions are marked on the ground. These field markings are then incorporated into timber sale contract documents. Sale administrators and road inspectors then monitor performance of the contractors relative to contract requirements. Input by resource staff specialists, such as fisheries biologists, soil scientists, hydrologists, and engineers, is regularly requested during this implementation monitoring process. These specialists provide technical advice when questions arise during project implementation.

Tongass National Forest staff annually conducts a review of BMP implementation and effectiveness. The results of this and other monitoring are summarized in a Tongass National Forest Annual Monitoring and Evaluation Report. This report provides information about how well the management direction of the Forest is being carried out and measures the accomplishment of anticipated outputs, activities, and effects.

### Project-specific Effectiveness Monitoring

Effectiveness monitoring is designed to determine how well specific design features or mitigation measures work in protecting natural resources and their beneficial uses. One heritage resource site in the vicinity of the Crab Bay LTF would be monitored throughout the duration of the sale. This would be accomplished by regular site visits by a Forest Service archeologist to ensure that no negative impacts are occurring at the site.

## Alternatives Eliminated from Detailed Study

Four alternatives were considered during the planning process, but have not been included in the EIS for detailed study. These are described briefly below, along with the reasons for not considering them further.

### Alternative C

The emphasis for this alternative was to reduce potential scenic impacts of harvest from major saltwater routes by locating most harvest units further up valleys and out of view from primary saltwater use areas. Three main sale areas were planned in VCUs 231/232, 233/234/246, and 246. Total planned harvest volume was 31.7 million board feet of timber (MMBF) on 1,489 acres, requiring construction of 33 miles of new road and reconstruction of 8 miles of existing road. No harvest was proposed in VCU 230 (Inbetween).

Because the issues addressed by this alternative were better addressed in Alternative F, this alternative was eliminated from further consideration.

### Alternative E

This alternative primarily addressed long-term sustained yield of the timber resource. It focused on establishing a thorough transportation system for future use in small and large-scale timber harvest and second growth management. This required more initial harvest to pay for the new road construction that would provide access to smaller operators in the future. Roads providing access to small sale opportunities would be maintained and kept open. Four main sale areas were planned in the same areas as Alternative C and in VCU 230 (Inbetween). Total planned harvest volume was 67.5 MMBF on 3,109 acres, requiring construction of 56 miles of new road and reconstruction of 11 miles of existing road.

The issue of providing small sale opportunities is addressed in all of the alternatives considered for analysis. Due to the market situation, the economic viability of sales requiring such extensive road construction was very poor. For these reasons, Alternative E was eliminated from further consideration.

### Alternative G

Alternative G was designed to provide a lower volume option that emphasized harvest methods other than clearcutting and to minimize road construction while meeting a reasonable level of economic viability. The only area proposed for harvest was VCU 246 (Broad Creek), an area in which some Sitkans were concerned about the effects of clearcutting. The harvest prescriptions were designed to promote healthy remaining timber stands while maintaining scenic quality and wildlife habitat structure in important deer and marten areas. Total planned harvest volume was 13.1 MMBF on 1,233 acres requiring 8.3 miles of new road construction.

This alternative was dropped in the DEIS due to the modification of the 1997 Forest Plan in April 1999. The 1999 Forest Plan ROD changed the LUD in this area to Semi-remote Recreation with no commercial timber harvest permitted (USDA 1999a). Current direction is that Tongass National Forest management should adhere to the 1997 Forest Plan ROD. Though currently in a Timber Production LUD, analysis in this VCU was deferred. The issue of providing a smaller volume alternative and minimizing road construction is better addressed in Alternatives F and H.

#### Chichagof Conservation Council (CCC) Alternative

The Chichagof Conservation Council submitted an alternative which recommended specific units be cable yarded using only group and single tree selection harvest prescriptions. The alternative was intended to “eliminate new permanent road construction (minimizing effects to brown bears), emphasize alternative logging practices where feasible (minimizing effects on subsistence and scenic resources), preclude the construction of new LTFs (minimizing impacts on the marine resources and uses), and establish opportunities for the long-term promulgation of very small timber sales from this sale area (maximizing economic benefit for Tenakee Springs residents).”

The Interdisciplinary Team evaluated this alternative by comparing the recommended prescriptions with the unit configurations prescribed for the original unit pool (Table 2-1a). Helicopter yarding systems were re-designed to show temporary road construction necessary to facilitate a cable yarding system. For this analysis, if the original prescriptions for a unit were even-aged, it was assumed that only 50% of that volume would be removed.

**Table 2 - 1a**  
**Chichagof Conservation Council Alternative**

Unit	Total Acres	Harvest Acres	Total Unit Volume (MBF)	Percent Harvest	Harvest Volume (MBF)*	Logging System	Management System
1983	8	7	100	50	50	cable	uneven-age
1992	42	40	962	50	481	cable	uneven-age
1990B	22	18	390	73	285	cable	two-age
2000	16	16	443	92	409	cable	two-age
2021	16	16	367	25	92	heli	uneven-age
1980	59	53	1139	63	722	cable	uneven-age
2040A	10	10	347	25	86	heli	uneven-age
2040B	70	49	2469	17	428	heli	uneven-age
1801	15	15	238	50	164	cable	two-age
1802	22	16	429	36	155	cable	two-age
1803A	7	7	140	50	70	shovel	uneven-age
1812	26	25	990	46	460	heli	two-age
1804	22	17	539	39	212	cable	two-age

Source: Abt 2002

\* MBF = thousand board feet of timber

This alternative was eliminated from detailed study for several reasons, which are summarized below.

- The CCC Alternative was designed for small sales, from which the operator would do secondary processing on site as much as possible. Small operators are most cost effective when working off an existing road system with little or no up-front

development costs. This suggested proposal works best for small operators once an infrastructure of roads is in place, and the cost of timber harvest does not include road construction, reconstruction, or LTF costs.

- Economically, this alternative incurs road costs (reconstruction of existing and temporary roads) that exceed the cost of the other alternatives (See Table 2-1b; Table 3-32). This alternative would have the highest risk of not selling of any alternatives considered in detail.
- Once the necessary infrastructure is in place, the District could provide small sale(s) opportunities.
- Retention of standing trees using cable yarding systems is best achieved when the logs are yarded uphill or removed vertically using a helicopter. Logs are difficult to control when cabled downhill; they roll into retained trees, causing physical damage and, subsequently, disease. The resulting stand is usually unhealthy and the retention level within is far less than desired. Building more roads to access the upper end of the units would not minimize road construction and could cause more resource damage by placing additional roads on steep slopes. To accomplish the high level of retention desired to meet the objectives stated in the CCC alternative (e.g., wildlife habitat and scenery), helicopter yarding or a mid- or upper-slope road would be required. Helicopter yarding was not an element of the CCC recommendation. It is also economically prohibitive on small-volume sales, and limits small-sale opportunities.

**Table 2 - 1b**  
**Financial Efficiency Analysis of Timber Harvest**

CCC Alternative	Fog Creek Cable
Logging Costs \$/ccf <sup>1</sup>	110.96
Road Costs \$/ccf <sup>2</sup>	132.71
Expected Bid \$/ccf <sup>3</sup>	(84.20)
Current Market Revenue <sup>4</sup>	(\$707,053)

<sup>1</sup> Total logging cost, total transportation costs less Road Costs per 100 cubic board feet (ccf)  
<sup>2</sup> Includes all reconstruction and temporary roads  
<sup>3</sup> Expected Bid = Selling Prices – Logging Cost (NEAT)  
<sup>4</sup> Current market is based Third Quarter 2002 Region 10 Appraisal Bulletin  
Source: Abt 2003

Most aspects of the issues addressed by the CCC Alternative have already been incorporated in the alternatives considered in detail. Alternative F proposes no classified road construction. It uses existing road and proposes approximately 4 miles of new temporary road construction. This would limit the effects of road access on the brown bear population. Likewise, Alternative H proposes very little new classified road. Implementation of either Alternative A (No-Action) or D would result in closure of all roads in VCUs 233 and 234. These would also reduce hunter access to bears following the sale(s).

Alternatives F and D both incorporate selection harvest prescriptions that were designed to mitigate both scenic and wildlife habitat effects. Most of these areas coincide with popular subsistence use areas near saltwater access.

Alternatives B and D would build a temporary drive-down ramp LTF near the mouth of Inbetween Creek. This LTF is located directly along the shoreline of Tenakee Inlet where flushing is not limited and is not expected to have significant impacts on the marine environment. Use of this area during the sale would add some traffic to the Inlet, as would any type of LTF.

Alternative B proposes a barge facility at the Crab Bay LTF to help mitigate potential effects on the herring spawn in this area. Alternatives D and F propose a slide LTF at this location where timing restrictions on its reconstruction and use would be required during the herring spawning season.

All alternatives were designed to include opportunities for small sales. It is unlikely that the Chichagof Conservation Council Alternative would promote a greater number of very small sale opportunities than the other alternatives considered in detail. Configuration of the sales to be offered would be decided after the decision is made for this analysis and would be based on demand for those sales and economic and physical feasibility (for example, yarding systems or road and LTF costs). Alternative H was specifically designed to be a smaller offering than the other alternatives, yet large enough to rebuild infrastructure.

## Alternatives Considered in Detail

The proposed action (Alternative B) and four other alternatives are considered in detail. Alternative A is the No-Action Alternative, under which the project area would have no timber harvest or road construction at this time and would remain subject to natural or ongoing changes only. The other action alternatives (Alternatives D, F, and H) represent different means of satisfying the purpose and need than does the proposed action by responding with different emphases to the significant issues discussed in Chapter 1. Maps of all alternatives considered in detail are located at the end of this chapter. The map for Alternative A, the No-Action Alternative, represents the existing condition of the project area.

### Alternative A (No-Action)

This alternative proposes no new commercial timber harvest or road construction in the Finger Mountain Project Area at this time. Free use permits would not be restricted under this alternative. Alternative A addresses several issues by having no adverse effect on old-growth associated wildlife, subsistence, scenic views, or the marine environment other than that which would occur through natural disturbance processes including tree windthrow, or landslides. There would also be no decrease in primitive recreation opportunities.

The No-Action Alternative does not preclude timber harvest from the Finger Mountain Project Area at some time in the future. The Council on Environmental Quality (CEQ) regulations (40 CFR 1502.14d) require that a “no action” alternative be analyzed in every EIS. This alternative represents the existing condition against which the other alternatives are compared. The map for Alternative A displays the existing distribution of productive old-growth (POG) forest. No commercial timber harvest is proposed.

### Alternative B

Alternative B is the project proposed action and the preferred alternative in the Draft EIS. The emphasis of this alternative is to reduce potential scenic impacts from Tenakee Inlet and protect popular subsistence use areas. The majority of the harvest and road construction is proposed further up the valleys, away from saltwater, and in areas that are not visible from the inlet. It also minimizes harvest near saltwater where the heaviest subsistence activity occurs. The design of this alternative is based on the ROD for the Southeast Chichagof FEIS, approved in 1992.

Two LTFs would be used. A drive-down ramp LTF would be constructed near the previously used site near the mouth of Inbetween Creek on Tenakee Inlet. This would be removed upon completion of this timber sale. A bulkhead for barge use would be reconstructed on the existing site at the mouth of Crab Bay. Restrictions on the reconstruction and use of these

facilities will eliminate adverse impacts to herring spawn in Tenakee Inlet. A floating logging camp is proposed in Crab Bay, which would access Inbetween and Crab Bay LTFs.

The timber volume proposed for sale in Alternative B, 21.4 million board feet (MMBF), would provide opportunities for timber harvesting and help move the project area towards the desired future condition identified in the 1997 Forest Plan by converting 1,027 acres of old-growth forest stands to provide a sustained yield of timber and a balanced mix of age classes. Alternative B was analyzed as two smaller sales, with the smallest being 8,798 thousand board feet (MBF). However, smaller sales could be sold from this alternative by advertising a single harvest unit separate from the remaining volume. This could provide sales as small as 416 MBF. All units would be harvested using cable or shovel yarding systems.

Alternative B would construct 9.8 miles of new National Forest System roads and 10.9 miles of new temporary roads. It would also reconstruct 13.8 miles of existing roads to access timber. After harvest activities are completed, a total of 13.0 miles of road would remain open in VCUs 230, 233, and 234. All other roads would be closed to motorized vehicles.

**Table 2 - 2**  
**Alternative B - Harvest Objectives and Practices**

Category	Unit or Measure	Amount
Harvest Method		
Clearcut	acres	153
Clearcut with Reserves	acres	867
Overstory Removal	acres	7
Harvest Volume <sup>1</sup>	MMBF <sup>2</sup>	21.4
Harvest System		
Cable or Shovel	MMBF	21.4
Helicopter	MMBF	0
Roads		
New construction	miles	20.7
Reconstruction	miles	13.8
Total Maintained Open Roads	miles	13.0
Economics		
Expected Bid	\$/ccf	(5.50) <sup>3</sup>
Current Market Revenue	\$	(291,007)
Direct Employment	jobs	140

<sup>1</sup> Excludes incidental right-of-way volume

<sup>2</sup> MMBF = million board feet

<sup>3</sup> Parentheses denote a negative number

## Alternative D

The emphasis of Alternative D is to minimize potential effects to areas of key wildlife not already covered by 1997 Forest Plan direction. This is responsive to the “old-growth-associated wildlife” issue, which identified concerns for maintaining important habitat connections for wildlife travel. Units were selected to maintain elevational connections between alpine and saltwater, as well as horizontal landscape connections between high-value habitats. Some units would be selectively harvested to maintain forest structure and cover in these areas.

Two LTFs would be used. A drive-down ramp LTF would be constructed near the previously used site at the mouth of Inbetween Creek on Tenakee Inlet. This would be removed upon completion of this timber sale. A low-angle slide facility would be reconstructed on the existing site at the mouth of Crab Bay. Restrictions on the reconstruction and use of this facility would eliminate adverse impacts to herring spawn in Tenakee Inlet. A floating logging camp is proposed in Crab Bay, which would access the Inbetween and Crab Bay LTFs.

The timber volume proposed for sale in Alternative D, 19.8 MMBF, would provide opportunities for timber harvesting and help move the project area towards the desired future condition of the 1997 Forest Plan by converting 994 acres of old-growth forest stands to provide a sustained yield of timber and a balanced mix of age classes. An additional 154 acres would be harvested but remain in an uneven-aged structure. Alternative D was analyzed as two smaller sales, with the smallest being 6,829 MBF. However, smaller sales could be sold from this alternative by advertising a single unit separate from the remaining volume. This could provide sales as small as 28 MBF.

Alternative D includes 6.7 miles of new National Forest System road construction, 8 miles of new temporary road construction, and 13.0 miles of existing road reconstruction. After harvest activities are completed, a total of 4.6 miles of road would remain open in VCU 230. All other roads would be closed to motorized vehicles. This would reduce hunter access that may impact the brown bear population in the area following the timber sale(s).

**Table 2 - 3**  
**Alternative D - Harvest Objectives and Practices**

Category	Unit or Measure	Amount
Harvest Method		
Clearcut	acres	116
Clearcut with Reserves	acres	852
Individual Tree Selection	acres	180
Harvest Volume <sup>1</sup>	MMBF <sup>2</sup>	19.8
Harvest System		
Cable or Shovel	MMBF	17.5
Helicopter	MMBF	2.3
Roads		
New construction	miles	14.7
Reconstruction	miles	13.0
Total Maintained Open Roads	miles	4.6
Economics		
Expected Bid	\$/ccf	(7.51) <sup>3</sup>
Current Market Revenue	\$	(398,827)
Direct Employment	jobs	140

<sup>1</sup> Excludes incidental right-of-way volume

<sup>2</sup> MMBF = million board feet

<sup>3</sup> Parentheses denote a negative number

## Alternative F

The emphasis of Alternative F is to further minimize potential effects to scenic resources in Tenakee Inlet and Crab Bay beyond what is required in the 1997 Forest Plan. Harvest prescriptions were selected that reduce or eliminate potential scenic effects viewed from these areas. Harvest in the Inbetween drainage was deferred to minimize harvest visible from the

Inlet. Selection harvest is also prescribed in some units to maintain important wildlife habitat structure. Alternative F also minimizes construction of new roads by reconstructing existing roads and constructing new temporary roads.

One low-angle slide LTF would be reconstructed at the existing site near the mouth of Crab Bay. Restrictions on the reconstruction and use of this facility would eliminate adverse impacts to herring spawn in Tenakee Inlet. The logging camp proposed in this alternative is a floating logging camp in Crab Bay.

The timber volume proposed for sale in Alternative F, 10.9 MMBF, would provide opportunities for timber harvesting and help move the project area towards the desired future condition of the 1997 Forest Plan by converting 358 acres of old-growth forest stands to provide a sustained yield of timber and a balanced mix of age classes. An additional 573 acres would be harvested but remain in an uneven-aged structure. Alternative F was analyzed as one sale that would rebuild infrastructure; however, smaller sales could be sold from this alternative by advertising a single unit separate from the remaining volume. This could provide for sales as small as 20 MBF.

Alternative F includes 4.3 miles of new temporary road construction and 9.5 miles of existing road reconstruction. After harvest activities are completed, a total of 7.3 miles of road would remain open in VCUs 230, 233, and 234. This includes 2.7 miles of existing road that is currently maintained in VCU 230 that would not be used in this alternative. All other roads would be closed.

**Table 2 - 4**  
**Alternative F - Harvest Objectives and Practices**

Category	Unit or Measure	Amount
Harvest Method		
Clearcut	acres	7
Clearcut with Reserves	acres	265
Individual Tree Selection	acres	600
Group or Strip Cuts	acres	59
Harvest Volume <sup>1</sup>	MMBF <sup>2</sup>	10.9
Harvest System		
Cable or Shovel	MMBF	5.8
Helicopter	MMBF	5.1
Roads		
New construction	miles	4.3
Reconstruction	miles	9.5
Total Maintained Open Roads	miles	7.3
Economics		
Expected Bid	\$/ccf	(27.58) <sup>3</sup>
Current Market Revenue	\$	(815,619)
Direct Employment	jobs	78

<sup>1</sup> Excludes incidental right-of-way volume

<sup>2</sup> MMBF = million board feet

<sup>3</sup> Parentheses denote a negative number

## 2 Alternatives

### Alternative H

The emphasis of this alternative is to promote a greater number of very small sale opportunities by first rebuilding existing infrastructure. The alternative was designed to try to incorporate some of the ideas within the CCC alternative such as “eliminate new permanent road construction (minimizing effects to brown bears), emphasize alternative logging practices where feasible (minimizing effects on subsistence and scenic resources), preclude the construction of new LTFs (minimizing impacts on the marine resources and uses), and establish opportunities for the long-term promulgation of very small timber sales from this sale area (maximizing economic benefit for Tenakee Springs residents).” Harvest in the Inbetween drainage was deferred to minimize visible harvest from the Inlet.

One low-angle slide LTF would be reconstructed at the existing site near the mouth of Crab Bay. Restrictions on the reconstruction and use of this facility would eliminate adverse impacts to herring spawn in Tenakee Inlet. The logging camp proposed in this alternative is a floating logging camp in Crab Bay.

The timber volume proposed for sale in Alternative H, 4.1 MMBF, would provide opportunities for timber harvesting, and help move the project area towards the desired future condition of the 1997 Forest Plan by converting 250 acres of old-growth forest stands to provide a sustained yield of timber and a balanced mix of age classes. Alternative H was analyzed as one larger sale needed to rebuild the infrastructure; however, smaller sales could be sold from this alternative by advertising single or multiple units separate from the remaining volume. This could provide for sales as small as 20 MBF.

Alternative H includes 0.6 mile of new National Forest System road construction, 3 miles of new temporary road construction, and 5.9 miles of existing road reconstruction. After harvest activities are completed, a total of 4.0 miles of road would remain open in VCUs 230, 233, and 234. This includes 2.7 miles of existing road that is currently maintained in VCU 230 that would not be used in this alternative. All other roads would be closed.

**Table 2 - 5**  
**Alternative H - Harvest Objectives and Practices**

Category	Unit or Measure	Amount
Harvest Method		
Clearcut	acres	0
Clearcut with Reserves	acres	205
Individual Tree Selection	acres	1
Group or Strip Cuts	acres	44
Harvest Volume <sup>1</sup>	MMBF <sup>2</sup>	4.1
Harvest System		
Cable or Shovel	MMBF	4.1
Helicopter	MMBF	0
Roads		
New construction	miles	3.6
Reconstruction	miles	5.9
Total Maintained Open Roads	miles	4.0
Economics		
Expected Bid	\$/ccf	(22.50) <sup>3</sup>
Current Market Revenue	\$	(285,094)
Direct Employment	jobs	33

<sup>1</sup> Excludes incidental right-of-way volume

<sup>2</sup> MMBF = million board feet

<sup>3</sup> Parentheses denote a negative number

## Comparison of Alternatives

This section compares outputs, objectives, and effects of the alternatives in terms of the significant issues for the Finger Mountain Project. The discussions of effects are summarized from Chapter 3, which should be consulted for a full understanding of these and other environmental consequences. Table 2-6 provides an overview comparison of information from the alternative descriptions and Chapter 3 relevant to the issues. This information will be used in the discussions that follow.

### Issue 1: Old-growth Habitat and Associated Wildlife

Alternative A proposes no timber harvest or road construction and has no adverse effects to wildlife habitat. All action alternatives incorporate and apply 1997 Forest Plan standards and guidelines for riparian areas, beach and estuary fringe, goshawk, and marten. No timber harvest would occur in beach or estuary fringe habitats in any alternative. Units proposed for harvest in action alternatives were selected and designed to preserve the integrity of old-growth habitat and to maintain connectivity. Each VCU in the project area includes a small OGR, part of a forest-wide system of habitat reserves. All of the reserves have been evaluated with interagency involvement. Together these reserves encompass 11,250 total acres, of which 6,226 are productive old-growth habitat (POG). POG is defined as having a timber volume of greater than eight thousand board feet per acre and is defined as volume strata low, medium, and high in the GIS database (Forest Plan 1997, p. 7-31). All alternatives will include the Interagency recommended additions of 476 acres (315 acres in POG) to VCU 231 and 117 acres (110 acres in POG) to VCU 232. With these additions, the No-Action and action alternatives will comply with the 1997 Forest Plan standards for small OGR. Because harvest activities will not occur within OGR, there will be no direct effects to OGR as a result

of the alternatives. Therefore, all alternatives maintain important old-growth forest connections between blocks of key habitat.

The alternatives differ in the total amount, type, and location of timber harvest proposed that could affect biodiversity and wildlife habitat. Within existing forested habitat (55,731 acres), approximately 61 percent (33,967 acres) is POG habitat<sup>1</sup>. Alternative D proposes the most acres of harvest of POG habitat (3 percent or 1,109 acres<sup>2</sup>). Alternative B proposes 3 percent harvest (910 acres), and Alternative F proposes 2 percent harvest (770 acres). Alternative H proposes the least harvest of POG habitat (1 percent or 205 acres). Overall, between 97 and 99 percent of the existing POG will be maintained in the project area.

Lower elevation (0 to 800 feet) POG habitat is important to deer because it provides habitat during the winter. Between 1 and 3 percent of the POG proposed for harvest is in the lower elevations (0-800 feet). Alternative D proposes to harvest the greatest amount of low-elevation POG (899 acres). Alternative B, F, and H propose to harvest 530, 402, and 205 acres of low-elevation POG, respectively.

An estimated 6 percent (3621 acres) of the stands within existing forested habitat have a coarse canopy texture (VC 5-N and VC 6/7). Alternatives B and D propose to harvest 3 percent of coarse canopy habitat, whereas Alternative F proposes a less than 1 percent reduction in coarse canopy habitat, and Alternative H proposes no reduction.

Habitat parameters that provide for high-value deer habitat include higher volume stands on south aspects, lower elevations, and low average snow depth. Reduction of high-value deer habitat from the existing level would occur only in WAA 3629. The largest reduction would occur as a result of Alternative B or D; each proposes a 2 percent reduction in high-value deer habitat. Alternatives F and H would reduce high-value deer habitat by 1 percent.

Marten harvest from trapping can substantially increase when road densities reach greater than 0.2 mile per square mile and roads are connected to communities. The current project area road density is 0.1 mile per square mile, with higher densities within VCUs 230, 233, and 234. However, these VCUs are not part of an interconnected road system and are not expected to receive the same kind of harvest that might otherwise be predicted. During implementation of the project, the road density of the project area would be 0.3 mile per square mile in Alternative B, 0.2 mile per square mile in Alternative D and 0.1 mile per square mile in Alternatives F and H. As a result of implementing the road management objectives, the open road densities after completion of the harvest activities would be below 0.2 mile per square mile in all alternatives, and the effects of trapping would not be significant.

## Issue 2: Subsistence Opportunities

Since no harvest or road construction is proposed in wildlife analysis area (WAA) 3309 (VCU 246) in any alternative, no effects on subsistence are anticipated. (See Figure Wildlife-1 in Chapter 3 for WAA boundaries.) The residents of Tenakee Springs harvest approximately 32 percent of their subsistence deer from WAA 3629 (VCUs 230-234). Although several other

<sup>1</sup> POG is defined as having a timber volume of greater than eight thousand board feet per acre and is defined as volume strata low, medium, and high in the GIS database (Forest Plan 1997, p. 7-31). POG differs from productive forest, which is a concept used for the purpose of managing timber. Productive forest is defined as forest land capable of producing 20 cubic feet of timber per acre per year.

<sup>2</sup> Acres do not include units with 25 percent individual tree selection harvest prescription because these units should have minimal effects on old-growth wildlife habitat (see the Management Indicator Species and Endemic Terrestrial Mammals section in Chapter 3 of this EIS).

communities, including Haines, Skagway, and Yakutat, also use the area for subsistence purposes, only a small portion of these communities' subsistence resources is obtained there. Alternatives B, D, and F propose activities in this WAA. The effects on subsistence to Tenakee Springs are analyzed in terms of access to subsistence resources, abundance and distribution, and competition for these resources.

There are no anticipated restrictions on access to the project area for subsistence purposes in any alternative. Additional access to WAA 3629 from constructed LTFs and roads would vary by alternative; however, due to its location across Tenakee Inlet, very little use by motorized vehicles or ATVs is expected.

Declines in deer abundance and changes in distribution are analyzed in terms of habitat loss due to harvest of POG and, specifically, deer winter habitat. These are discussed in Issue 1 (Old-growth-associated wildlife). Through implementation of 1997 Forest Plan standards and guidelines that protect deer winter habitat, each of the alternatives reduces the level of decline in deer abundance. These standards and guidelines include a 1,000 foot beach and estuary fringe no-harvest zone along all saltwater shoreline, and riparian no-harvest buffers around all streams that have potential to effect fish habitat. In addition, at least one small OGR is located within each VCU (major watershed).

The average deer harvest for Tenakee Springs in the communities' three primary use areas (WAAs 3629, 3526, and 3627) is currently at 6.8 percent of habitat capability. This is below the anticipated level where reduced hunter efficiency is anticipated (10 to 20 percent habitat capability) and well below the level where a restriction on hunter access may be necessary (greater than 20 percent). After 100 years of full implementation of the 1997 Forest Plan, demand by all hunters in these WAAs is projected to reach 16.4 percent of habitat capability. This is still below the 20 percent level for restricting hunter access. Our analysis shows that no significant restrictions on any subsistence resource from past, current, and reasonably foreseeable future actions would occur in any alternative (see Chapter 3).

There may be temporary increases in competition during harvest operations from the presence of logging crews at proposed logging camps. This would be a short-term effect for approximately 3 to 5 years per sale (some may run concurrently) while the roads are constructed and the sale is harvested. Alternatives B, D, F, and H, because they propose a floating logging camp in Crab Bay, could temporarily increase competition near Crab Bay.

The alternatives vary in the amount of timber volume proposed for harvest. The more volume an alternative proposes for harvest, the more likely that alternative is to temporarily increase subsistence competition during harvest operations. This is because the sale contract associated with the alternative is likely to be longer, and logging crews would remain in the area for a longer time. Given that, Alternatives B and D would likely increase competition more than the other alternatives for they propose a harvest volume of 21.4 MMBF and 19.8 MMBF, respectively. Among the action alternatives, Alternative H proposes a harvest volume of 4.1 MMBF, the lowest of any of the alternatives. Therefore, Alternative H is likely to result in a lower increase in competition than any of the other action alternatives.

## Issue 3: Scenic Resources and Recreation Experiences

All alternatives are consistent with the visual quality objectives established within the 1997 Forest Plan. In addition, they comply with the 1997 Forest Plan standards and guidelines for beach and estuary fringe, and riparian buffers. No timber harvest would occur within 1,000 feet of any shoreline or estuary area, or around any streams with potential to effect fish habitat or water quality in any alternative. These no harvest areas would greatly reduce scenic impacts from saltwater locations surrounding the project area.

## 2 Alternatives

All alternatives were analyzed from 1997 Forest Plan identified priority travel routes and use areas. Some units within the Inbetween drainage (VCU 230) would be visible from areas in the northwest reaches of Tenakee Inlet. Alternative D would have the most effect in this area. Alternative B would have some visible harvest but most units are located two or more miles up the valley. Alternatives A and F would have no visible effect in this area. Harvest in this drainage would not be seen from the primary travel routes.

Several harvest units in Alternatives B and D located at the mouth of Crab Bay (VCU 233) are visible from the ferry route and small boat route in Tenakee Inlet. The scenic effects from harvest in this area and the Fog Creek drainage (VCU 234) would be greatest in Alternative D. Alternative F would have little effect from harvest in this area as viewed from Crab Bay, Tenakee Inlet, and Tenakee Springs.

Four main vantage points were identified during scoping as locations where the views may be adversely impacted by timber harvest and associated activities. These included the views from Tenakee Springs, Tenakee Inlet, Crab Bay, and Saltery Bay. The views from Saltery Bay would not be affected by any alternatives, as harvest was deferred in this area at this time. The alteration of the landscape visible from Tenakee Springs, Tenakee Inlet, and Crab Bay is greatest in Alternative D, and least in Alternative F. (Refer to the Issue 4 discussion on scenic effects from LTFs, logging camps, and decking yards.)

With the proposed harvesting and roading in VCUs 230, 233, and 234, people seeking to use this area for the existing primitive recreation experience would possibly have to go elsewhere. Alternative B would have the greatest impact on recreation experiences in the entire project area due to the amount of ground disturbance proposed and time necessary to complete the harvest activities. Alternative F would have the least impact because 100 fewer acres are disturbed and 10 MMBF less volume harvested than in Alternative B.

In each action alternative, road construction and harvesting would change the recreation opportunity from a more primitive experience to a more developed experience. Alternative B would have the greatest impact with an 8 percent decrease in the area available for Semi-primitive Non-motorized opportunities, which become Roaded Modified opportunities. Alternative F would have the least impact with a 4 percent decrease in Semi-primitive Non-motorized opportunities.

Alternative F would have the greatest effect on the existing Semi-primitive Motorized Recreation Places (9 percent decrease). The Crab Bay Semi-primitive Motorized Recreation Place would decrease by 161 acres in this alternative, becoming part of a more developed recreation experience. Alternative B would have the least effect with no changes to existing identified Recreation Places. Alternative D would decrease the size of the Little Seal Semi-primitive Motorized Recreation Place by 53 acres due to development from road building and harvesting in the Inbetween sale area.

### Issue 4: Log Transfer Facilities, Camps, and the Marine Environment

Tenakee Inlet is considered one of fourteen major herring stock areas of Southeast Alaska and Yakutat. When the amount of herring produced in this area exceeds 3,000 tons, the Alaska Department of Fish and Game (ADF&G) has allowed a bait fishery. The fishery occurred from 1978 through 1990. Weak herring returns prevented fishing from 1990 through 1996. Since 1996, herring stock numbers have rebounded, and the bait fishery was reopened. For 12 of 21 spawning seasons from 1979 through 1999, herring spawn was documented by ADF&G along the shoreline at or near the Crab Bay LTF site.

All of the action alternatives propose to reconstruct and use a LTF at the Crab Bay site on Tenakee Inlet. LTF reconstruction and operation at this site, have potential to impact herring due to concentrations of tree bark from rafted logs, sediment produced during LTF reconstruction and operation, and crushing of eggs deposited on the slide.

Alternative B proposes a bulkhead facility that would be used to barge all logs. Timing restrictions would apply during reconstruction but not operation. No logs would be placed or stored directly in saltwater, nor would equipment be operated on intertidal rocks. Alternatives D, F, and H propose reconstruction of a low-angle slide at Crab Bay with timing restrictions on both the reconstruction and operation of the facility. Due to the high likelihood that herring will spawn in and near Crab Bay, reconstruction and operation of the LTF will be restricted (i.e., no use) from April 15 – June 15 each year unless the Forest Service and ADF&G agree differently. Fuel transfers would be allowed during this period to maintain inland heavy equipment operations. The contractor(s) is responsible for any and all clean-up costs and civil damages resulting from the negligent spill of any hazardous material, including fuel.

Alternatives B, D, and H also propose to construct and operate a new temporary drive-down ramp at the mouth of Inbetween Creek (VCU 230) near a previously used site. Based on the State's information of the herring spawn, we do not expect this site to have any effect on the herring spawn in the Inlet.

The large size, linear shape, and saltwater location of LTFs generally present a very strong visual impact when viewed within a foreground distance. However, their relatively low profile helps to blend them into background views. Drive-down and slide-type LTFs usually present less of a visual impact than larger bulkhead-type facilities. The bold form of bulkheads associated with barge LTFs prevents them from blending into the surrounding landscape. Often, the type of material and color of the bulkhead create strong contrasts that can be seen even in the background.

The temporary drive-down ramp LTF proposed at Inbetween in Alternatives B, D, and H should not present a dramatic visual impact from the Inlet, and any views of this LTF would only be for the duration of the sale(s). Alternative B also includes a bulkhead facility at the Crab Bay LTF site. This would have the greatest scenic effect, as this LTF site is located on Tenakee Inlet across from Tenakee Springs. Alternatives D, F, and H utilize a low-angle slide at this site which is likely to be less visible.

Clearings for decking and scale yards, and logging camps may also add to the visual impacts associated with LTFs. However, their location is usually on level or gently sloping sites, which helps to absorb much of their visual contrast when viewed from saltwater. With the recent removal of the log camp in Corner Bay, floating logging camps are being considered for this project in Crab Bay in Alternative B, D, F, and H. Visual impacts from floating camps are considered to be much less than more permanent upland camps.

### Issue 5: Economic Opportunities for Small-scale Timber Operators

Actual sales offered from any of the action alternatives would be determined at the time the sales are prepared and appraised. The determination of whether a small sale opportunity exists is usually based on sale economics, required yarding systems, necessary road and LTF construction, road management objectives, and interest by purchasers. Although all of the action alternatives except Alternative H were analyzed for medium to large sale sizes (6.8 to 13 MMBF), smaller sales could be offered from within any of these sales should purchaser interest warrant. Alternative H was designed as the smallest sale (4.1 MMBF) that would be economically feasible. None of the action alternatives proposes harvesting so much wood

## 2 Alternatives

that the future wood supply or quality of wood by species would be rendered insufficient for small sale operators.

Alternative B would provide the greatest opportunity for offering future small sales following completion of the Finger Mountain Timber Sale(s) project; the project would result in construction of 9.8 miles of new system roads and reconstruction of 13.8 miles of existing roads. Thirteen miles of National Forest System roads will be maintained for vehicle access following the sales. The alternative also provides opportunities for small-scale timber operators within the scope of the Finger Mountain Project itself, in that only cable and shovel (no helicopter) yarding systems are proposed.

Alternative D is primarily designed with cable yarding systems. However, approximately 12 percent of the volume proposed for harvest under this alternative would be harvested by helicopter. This alternative has the best potential for offering small sales as a subset of the units proposed for this project. Location of the units near the LTFs, gentle topography, and better overall economics of the planned sales are positive factors for small sales within the current project. Since Alternative D maintains the fewest miles (4.6) of open National Forest System roads following the closure of the sales resulting from this project, future opportunities for small sales are fewer.

Alternative F proposes the largest proportion of helicopter harvest (47 percent of the volume proposed for harvest). Helicopter harvest is generally not economically feasible unless part of a larger sale. Alternative F proposes no new permanent road construction and only 4.3 miles of temporary road; this would limit future opportunities for small operators. However, there are some units available on the existing road that may be conducive to small operators. This alternative would result in 7.3 miles of National Forest open roads following the larger sale, which would provide some limited future opportunity to small operators.

Alternative H is designed exclusively for cable or shovel yarding opportunities; no helicopter harvest is proposed. Alternative H proposes the least new road construction of the action alternatives. Only 0.6 mile of new permanent road and 3.0 miles of temporary road would be constructed under this alternative. In addition, 4.0 miles of open National Forest System road would be maintained following the closure of any sales resulting from this alternative.

Table 2 – 6  
Comparison of Alternatives

	ALT A No-Action	ALT B	ALT D	ALT F	ALT H
<b>Acres Feasible for Harvest<sup>1</sup></b>	4,604	4,604	4,604	4,604	4,604
<b>Proposed Treated Acres<sup>2</sup></b>	0	1,027	1,148	931	250
<b>Proposed Harvest Acres<sup>3</sup></b>	0	936	1,036	827	223
<b>% Total Productive Forest Acres Harvested<sup>4</sup></b>	0%	2.6%	2.8%	2.3%	0.6%
<b>Harvest by Management System</b>					
Even-aged (acres)	0	902	816	187	168
Two-aged (acres)	0	125	178	171	82
Uneven-aged (acres)	0	0	154	573	0
<b>Harvest by Silvicultural Prescription</b>					
Clearcut (acres)	0	153	116	7	0
Clearcut with Reserves (acres)	0	867	852	265	205
Individual Tree Selection (acres)	0	0	180	600	1
Strip Cuts (acres)	0	0	0	59	44
Overstory Removal (acres)	0	7	0	0	0
<b>Total Volume Harvested (MMBF)<sup>5</sup></b>	0	21.4	19.8	10.9	4.1
Cable/Shovel	0	21.4	17.5	5.8	4.1
Helicopter	0	0	2.3	5.1	0
<b>Net Stumpage Value<sup>6</sup></b>					
Expected Bid (\$/ccf)	0	(5.50)	(7.51)	(27.58)	(22.50)
Current Market Revenue (\$)	0	(291,007)	(398,827)	(815,619)	(285,094)
<b>Direct Employment Potential During Sale(s)</b>	0	140	140	78	33
<b>New Classified Road Construction (miles)</b>	0	9.8	6.7	0	0.6
<b>New Temporary Road Construction (miles)</b>	0	10.9	8.0	4.3	3.0
<b>Existing Road Reconstruction (miles)</b>	0	13.8	13.0	9.5	5.9
<b>Road Density (miles per square mile)</b>	0.2	0.3	0.3	0.2	0.2
<b>Road Miles Maintained Open (new &amp; existing)</b>	2.7	13.0	4.6	7.3	4.0
<b>Number of LTF Sites Used</b>					
Drive-down slide facility	0	1	1	0	0
Bulkhead (barge) facility	0	1	0	0	0
Slide Facility	0	0	1	1	1
<b>Logging Camps Proposed</b>					
Land camp	N/A	N/A	N/A	N/A	N/A
Floating Camp	N/A	Crab Bay	Crab Bay	Crab Bay	Crab Bay
<b>Scenic Ranking (based on vantage points of concern identified during scoping)</b>	1	3	4	2	2
<b>ROS<sup>7</sup> Class (% of Project Area)</b>					
Primitive	39%	38%	39%	39%	39%
Semi-Primitive Non-Motorized	44%	36%	38%	40%	43%
Semi-Primitive Motorized	4%	5%	4%	4%	5%
Roaded Modified	13%	21%	19%	17%	13%
<b>% of High Value Deer and Marten Habitat (existing in 1999), Unharvested in WAA<sup>8</sup> 3629</b>					
Deer (6,404 acres)	100%	98%	98%	99%	99%
Marten (6,770 acres)	100%	97%	98%	99%	>99%

<sup>1</sup> Feasible acres are available for harvest as defined in the 1997 Forest Plan and have been checked for logging feasibility.

<sup>2</sup> Proposed Treated Acres are total acres (including riparian reserves) within units where harvest is proposed.

<sup>3</sup> Proposed Harvest Acres actually to receive cutting within units where harvest is proposed (does not include riparian reserves).

<sup>4</sup> Forested land is categorized into productive and non-productive forest land for purposes of managing timber. The Forest Service defines productive forest land as capable of producing 20 cubic feet per acre per year. The figures in this row are derived by dividing Proposed Harvest Acres by 35,917 (the amount of total productive forest acres within the project area).

<sup>5</sup> MMBF = million board feet of timber volume.

<sup>6</sup> Parentheses denote negative values.

<sup>7</sup> ROS = Recreation Opportunity Spectrum (see Recreation section in Chapter 3).

<sup>8</sup> WAA = Wildlife Analysis Area (see MIS and Endemic Terrestrial Mammals section in Chapter 3).

## Findings and Disclosures

Several of the laws and executive orders listed in Chapter 1 require project-specific findings or other disclosures. These are included here. They apply to all alternatives considered in detail in this EIS.

### **National Forest Management Act**

All project alternatives fully comply with the 1997 Forest Plan. This project incorporates all applicable 1997 Forest Plan forest-wide standards and guidelines and management area prescriptions as they apply to the project area and complies with 1997 Forest Plan goals and objectives. All required interagency review and coordination has been accomplished.

The 1997 Forest Plan complies with all resource integration and management requirements of 36 CFR 219 (219.14 through 219.27). Application of 1997 Forest Plan direction for the Finger Mountain Project ensures compliance at the project level. Specific NFMA findings pertaining to silvicultural systems are included in Chapter 3.

### **Forest Service Transportation Final Administrative Policy (Roads Rule)**

The Tongass National Forest has prepared the Finger Mountain Timber Sale(s) Final EIS to be consistent with the Forest Service Transportation Final Administrative Policy (Roads Rule).

### **Endangered Species Act**

None of the alternatives is anticipated to have a direct, indirect or cumulative effect on any threatened or endangered species in or outside the project area. Consultations with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service have been conducted, and these agencies have concurred that the proposed project is not likely to affect any threatened or endangered species. A complete biological assessment is included in the planning record.

### **Tongass Timber Reform Act**

Application of 1997 Forest Plan riparian standards and guidelines ensures that no commercial timber harvest will occur within 100 feet of any Class I stream or any Class II stream flowing directly into a Class I stream.

### **National Historic Preservation Act**

Heritage resource surveys of varying intensities have been conducted, following inventory protocols approved by the Alaska State Historic Preservation Officer. Native communities have been contacted and public comment encouraged. The consultation and concurrence process with the State Historic Preservation Officer is complete. No significant effects on known heritage resources are anticipated.

### **Federal Cave Resource Protection Act**

No known significant caves in the project area will be directly or indirectly affected by project activities.

### **Alaska National Interest Lands Conservation Act (ANILCA)**

An ANILCA Section 810 subsistence evaluation was conducted. No significant restrictions on the abundance and distribution of, access to, or competition for subsistence resources in the project area are anticipated. (See the Subsistence section in Chapter 3.)

### **Clean Water Act**

Congress intended the Clean Water Act of 1972 (Public Law 92-500) as amended in 1977 (Public Law 95-217) and 1987 (Public Law 100-4) to protect and improve the quality of water resources and maintain their beneficial uses. Section 313 of the Clean Water Act and Executive Order 12580 of January 23, 1987 address Federal agency compliance and consistency with water pollution control mandates. Agencies must be consistent with requirements that apply to "any governmental entity" or private person. Compliance is to be in line with "all Federal, State, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution." The Clean Water Act (Sections 208 and 319) recognizes the need for control strategies for nonpoint source pollution. The National Nonpoint Source Policy (December 12, 1984), the Forest Service Nonpoint Strategy (January 29, 1985), and the USDA Nonpoint Source Water Quality Policy (December 5, 1986) provide a protection and improvement emphasis for soil and water resources and water-related beneficial uses. Soil and water conservation practices (BMPs) were recognized as the primary control mechanisms for nonpoint source pollution on National Forest System lands. The Environmental Protection Agency supports this perspective in their guidance, "Nonpoint Source Controls and Water Quality Standards" (August 19, 1987).

The Forest Service must apply BMPs that are consistent with the Alaska Forest Resources and Practices Regulations to achieve Alaska Water Quality Standards. The site-specific application of BMPs, with a monitoring and feedback mechanism, is the approved strategy for controlling nonpoint source pollution as defined by Alaska's Nonpoint Source Pollution Control Strategy (October 2000). In 1997, the State approved the BMPs in the Forest Service's Soil and Water Conservation Handbook (FSH Handbook 2509.22, October 1996) as consistent with the Alaska Forest Resources and Practices Regulations. This Handbook is incorporated into the 1997 Forest Plan.

A discharge of dredge or fill material from normal silviculture activities such as harvesting for the production of forest products is exempt from Section 404 permitting requirements in waters of the United States, including wetlands (404(f)(1)(A)). Forest roads qualify for this exemption only if they are constructed and maintained in accordance with BMPs to assure that flow and circulation patterns and chemical and biological characteristics of the waters are not impaired (404(f)(1)(E)). The BMPs that must be followed are specified in 33 CFR 323.4(a). These specific BMPs have been incorporated into the Forest Service's Soil and Water Conservation Handbook under BMP 12.5.

### **Clean Air Act**

Emissions anticipated from the implementation of any project alternative will be of short duration and are not expected to exceed State of Alaska ambient air quality standards (18 AAC 50).

**Coastal Zone Management Act**

In the DEIS, the Forest Service made a determination that the Finger Mountain Timber Sale(s) project will affect the coastal zone and will be consistent to the maximum extent practicable with the enforceable policies of the Alaska Coastal Management Program (ACMP). That determination and supporting information were provided to the State of Alaska, Division of Governmental Coordination. The State reviewed the project and agreed with the Forest Service's determination.

**Executive Order 11988**

The numerous streams in the Finger Mountain Project Area make it essentially impossible to avoid all floodplains during timber harvest and road construction. The 1997 Forest Plan standards and guidelines for riparian areas exclude most commercial timber harvesting from floodplains. Roads may be constructed in or through floodplains subject to the design requirements of the BMPs. Effects on floodplains from project activities have been avoided or minimized as much as possible.

**Executive Order 11990**

Because they are so extensive in the Finger Mountain Project Area, it is not feasible to avoid all wetland areas. Wetland soils not meeting 1997 Forest Plan criteria for timber harvest suitability have been excluded from the harvest base. Soil moisture regimes and vegetation on some wetlands may be altered in some harvest units; however, the affected wetlands will meet wetland classification and will still function as wetlands in the ecosystem.

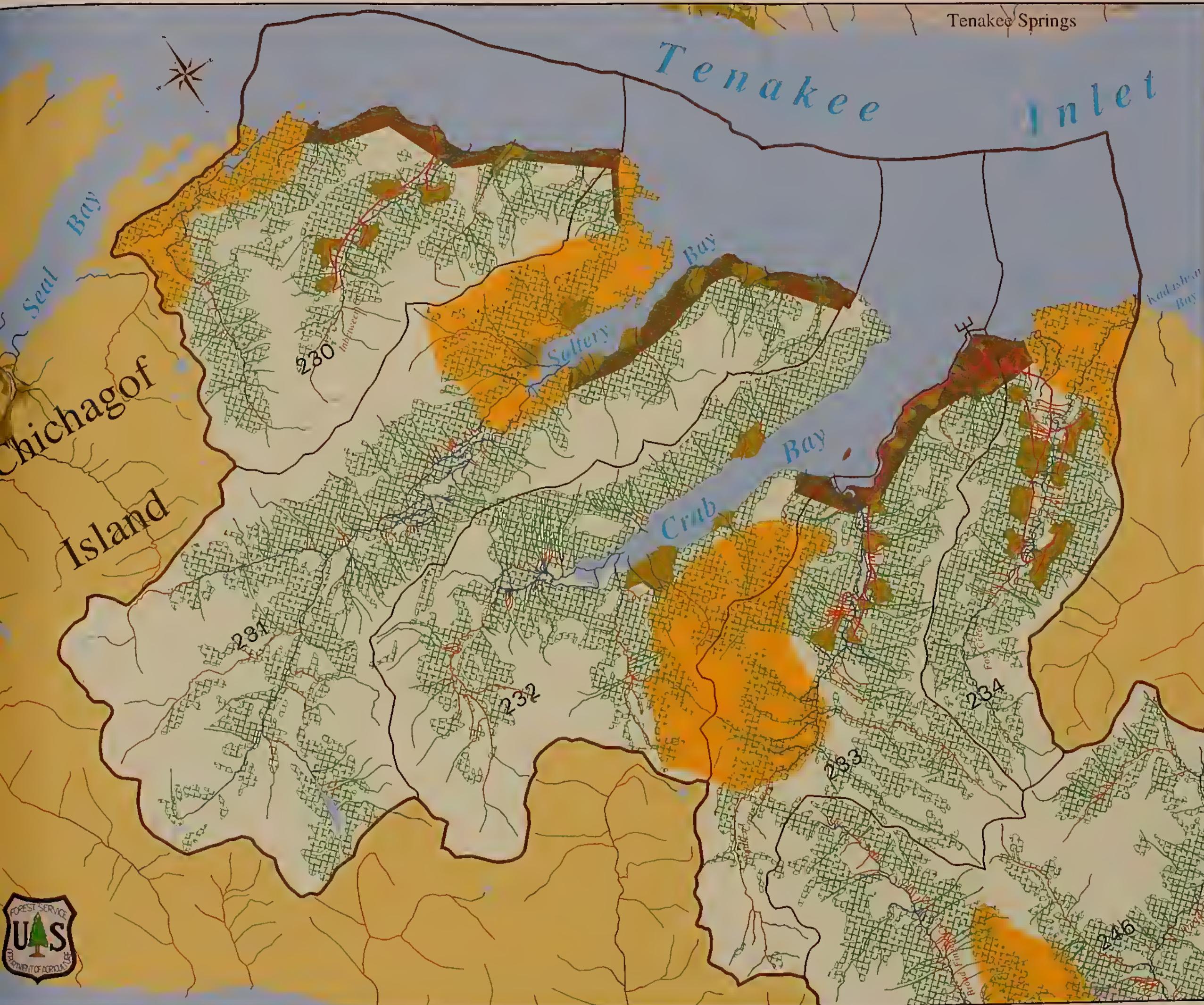
Road construction across wetlands is permitted within Alaska. Such construction requires the filling-in of wetlands and creates permanent loss of wetland habitat. Effects to wetlands are minimized through the application of specific BMPs.

**Executive Order 12898**

Implementation of any project alternative is not anticipated to cause disproportionate adverse human health or environmental effects to minority or low-income populations. (See also the ANILCA Section 810 findings and the Social Values and Economics section in Chapter 3.)

**Executive Order 12962**

With the application of 1997 Forest Plan standards and guidelines, including those for riparian areas, no significant adverse effects to freshwater or marine resources will occur. Post-project road closures could limit access to some recreational fishing opportunities to walk-in access or access by permitted off-highway vehicles. However, most recreational fishing throughout the Tongass occurs by boat in saltwater, and any adverse effects would be minimal. (Refer to the Water, Soil, and Fish section in Chapter 3.)



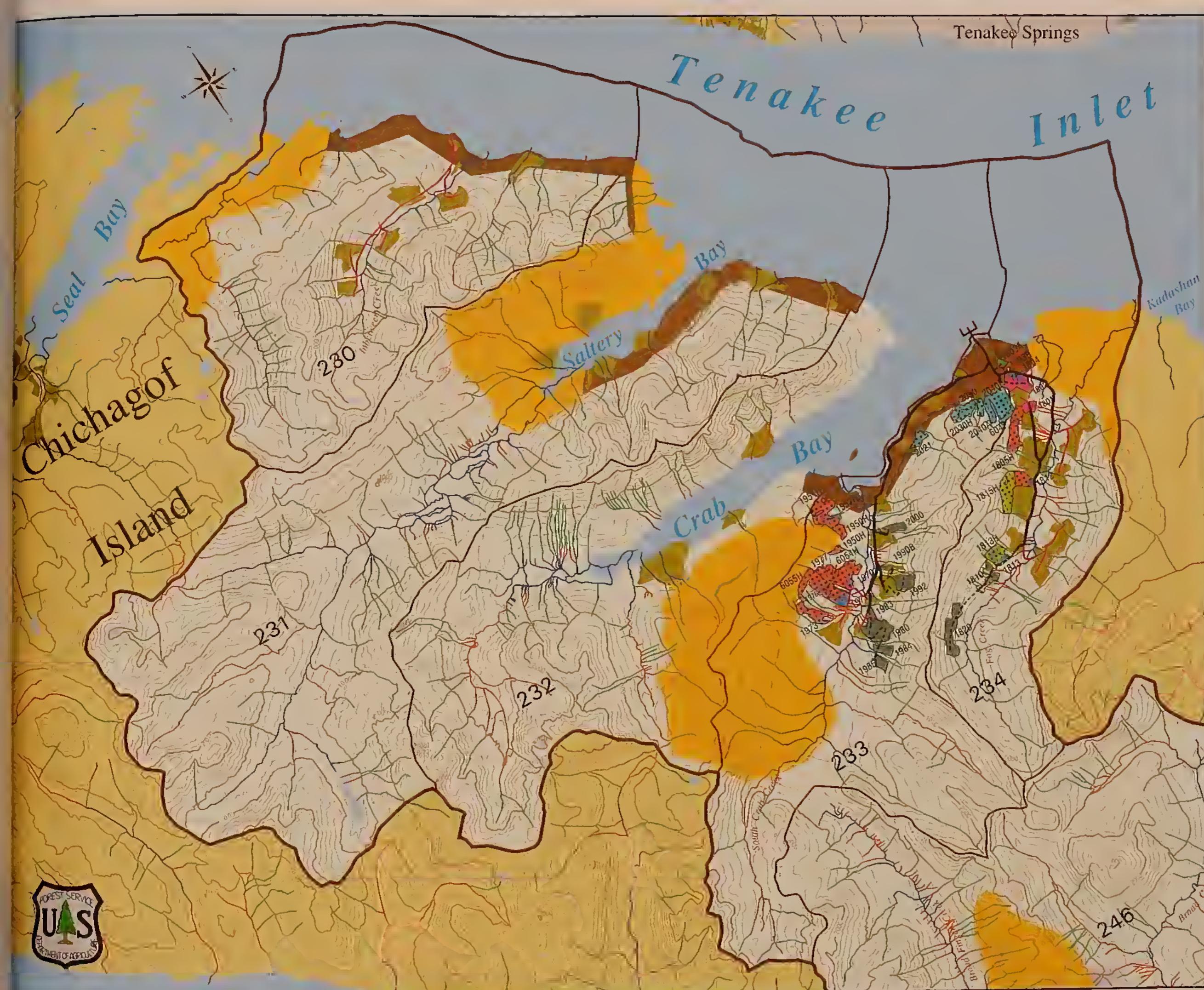




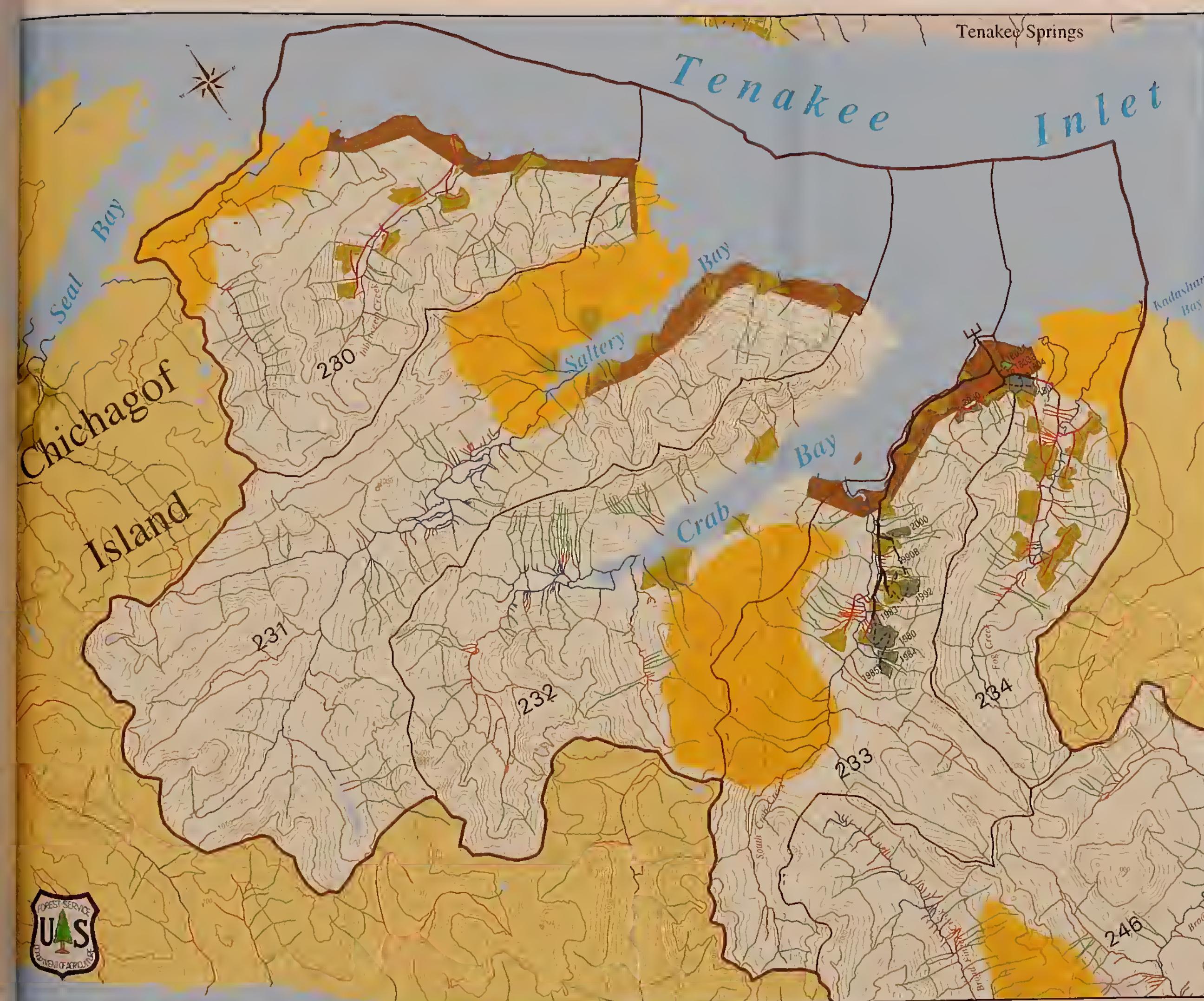












# FINGER MOUNTAIN

## ALTERNATIVE H

### Final Environmental Impact Statement

June 2003

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# **Chapter 3**

## **Environment and Effects**



# Chapter 3

## Environment and Effects

### Introduction

This chapter contains information concerning the existing environment of the Finger Mountain Project Area and potential effects to that environment. It also presents the scientific and analytical basis for the comparison of alternatives presented in Chapter 2. Current conditions and uses of each resource potentially affected by the alternatives are described. All significant or potentially significant effects, including direct, indirect, and cumulative effects, are disclosed. Effects are quantified where possible, and qualitative discussions are also included. The means by which adverse effects would be reduced or mitigated are described.

The discussions of resources and potential effects draw from existing information included in the 1997 Forest Plan, Southeast Chichagof Landscape Analysis (Shephard and others 1999), project-specific resource reports and related information, and other sources as indicated. Where applicable, such information is briefly summarized and referenced to minimize duplication. The planning record for the Finger Mountain Project includes all project-specific information, such as resource reports, landscape analysis, and results of field investigations. It also contains information resulting from public involvement efforts. The planning record is located at the Sitka Ranger District Office in Sitka, Alaska, and is available for review during regular business hours. Information from the record is available upon request.

### Land Divisions

The land area of the Tongass National Forest has been classified, or divided, in several ways to describe the different resources and to assess the effects of 1997 Forest Plan and project-level decisions. These divisions vary by resource since the relationship of each resource to geographic conditions and zones also varies. The allocation of 1997 Forest Plan land use designations (discussed in Chapter 1) is one such division. Two other divisions, Value Comparison Units and Wildlife Analysis Areas, are important for the effects analysis in this EIS and are described briefly here.

#### **Value Comparison Units (VCUs)**

These are distinct geographic areas, each encompassing a drainage basin containing one or more large stream system. The boundaries usually follow major watershed divides. The project area contains six VCUs (see the discussion in Chapter 1 and Figure 1-2). VCUs have been delineated at the Forest-level scale and used in the 1997 Forest Plan. Due to the coarse nature of data at that scale, some VCU boundaries do not precisely follow the intended ridges and drainages. For the Finger Mountain Project Area, these have been modified to more accurately reflect the intended lines from the Forest delineation. For this reason, there may be slight acreage differences within a given VCU when compared to the 1997 Forest Plan.

#### **Wildlife Analysis Areas (WAAs)**

Wildlife Analysis Areas (WAAs) are geographic areas defined by the Alaska Department of Fish and Game to monitor and manage wildlife populations. Approximately 190 WAAs apply to the Tongass National Forest. All of the land in the project area being considered for harvest falls within the boundaries of WAA 3629. The Management Indicator Species and Endemic Terrestrial Mammals and Subsistence analyses refer to WAAs in presenting information and estimating effects.

# 3 Environment and Effects

## Analyzing Effects

Environmental consequences are the effects of implementing an alternative on the physical, biological, social, and economic environment. The Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act (NEPA) include a number of specific categories to use for the analysis of environmental effects. Several categories are applicable to the proposed project and alternatives. They form the basis of much of the analysis that follows, and they are explained briefly here.

### Direct, Indirect, and Cumulative Effects

Direct environmental effects are those occurring at the same time and place as the initial cause or action. Indirect effects are those that occur later in time or are spatially removed from the activity but would be significant in the foreseeable future. Cumulative effects result from incremental results of actions when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor, but collectively significant, actions taking place over a period of time. The scope by which effects are measured is not necessarily limited to the project area. The geographical area within which effects of activity are analyzed is identified within the applicable resource section.

### Past, Present, and Reasonably Foreseeable Future Actions

Timber harvest and associated activities (construction and maintenance of roads, log transfer facilities [LTFs], and field camps) have occurred in the Finger Mountain Project Area. An estimated 184 acres were harvested between 1920 and 1941 and approximately 1700 acres were harvested from 1956 to 1986.

Harvest activities proposed to occur in the vicinity of Finger Mountain include the Indian River Timber Sale. This project area is located across Tenakee Inlet in VCUs 216, 220, 222, and 204. The Record of Decision (ROD) for the Indian River Environmental Impact Statement identified 23.8 million board feet (MMBF) on 1,559 acres planned for harvest. Any potential harvest resulting from this analysis is separated from the Finger Mountain Project Area by Tenakee Inlet and the ridge located behind the City of Tenakee Springs. The Indian River FEIS was appealed and remanded back to the Forest. A supplement to the FEIS would be needed prior to proceeding with this sale. Currently the Indian River Timber Sale is not included in the Forest's Ten Year Timber Sale Plan.

Outside of the project area, the False Island, Corner Bay, and Broad Creek timber sales are proposed for future harvest. The False Island Project Area lies on the southeast portion of Chichagof Island. The project is a proposal to harvest an estimated 20 MMBF of sawlog and utility timber on approximately 1,400 acres in potentially one or more timber sales. The Corner Bay Project Area lies within VCUs 236, 238, and 239. The Broad Creek Project Area lies within VCU 246. Proposals have not been developed for these project areas, though the Forest's Ten Year Timber Sale Plan shows volume estimates at 18 and 15 MMBF, respectively, for these projects. The Finger Mountain Timber Sale(s) Project will be incorporated into the NEPA cumulative effects analysis for these projects. No other adjacent harvest is planned at this time.

Thinning of harvested stands; road maintenance; road, timber, stream, wildlife and other surveys; and general maintenance and monitoring activities as required by the 1997 Forest Plan have and will continue to occur in the project area. Recreation activities that have occurred and will continue to occur in the project area include:

- wildlife viewing;
- subsistence and sport hunting;
- trapping;
- shellfish gathering;
- natural foods gathering;
- picnicking;
- saltwater fishing;
- camping;
- recreational boating;
- recreational viewing from the bays, Tenakee Inlet, and Tenakee Springs; and
- gathering forest products for personal use.

## **Unavoidable Adverse Effects**

Implementation of any action alternative would cause some adverse environmental effects that cannot be effectively mitigated or avoided. Unavoidable adverse effects often result from managing the land for one resource at the expense of the use or condition of other resources. Many adverse effects can be reduced, mitigated, or avoided by limiting the extent or duration of effects. The interdisciplinary procedure used to identify specific harvest units and roads was designed to eliminate or lessen the significant adverse consequences. The application of 1997 Forest Plan standards and guidelines, Best Management Practices (BMPs), project-specific mitigation measures, and monitoring are all intended to further limit the extent, severity, and duration of potential effects. Such measures are discussed throughout this chapter. Regardless of the use of these measures, some adverse effects would occur. The purpose of this chapter is to fully disclose these effects.

## **Short-term Use and Long-term Productivity**

Short-term uses and their effects are those that occur annually or within the first few years of project implementation. Long-term productivity refers to the capability of the land and resources to continue producing goods and services long after the project has been implemented. Under the Multiple Use-Sustained Yield Act, and the National Forest Management Act, all renewable resources are to be managed in such a way that they are available for future generations. The harvesting and use of standing timber can be considered a short-term use of a renewable resource. As a renewable resource, trees can be reestablished and grown again if the long-term productivity of the land is maintained. This long-term productivity is maintained through the application of the resource protection measures just mentioned, in particular those applying to soil and water resources. These are also discussed throughout the chapter.

## **Irreversible and Irretrievable Commitments**

Irreversible commitments describe a loss of future options. Irreversible applies primarily to the effects of use of nonrenewable resources such as mineral extraction or destruction of a heritage resource site. Once these resources are gone, they cannot be replaced. Irreversible can also apply to factors such as soil productivity that are renewable only over long periods of time.

# 3 Environment and Effects

Irrecoverable commitments apply to the loss of production, harvest, or use of natural resources. For example, some or all of the timber production from an area is lost irretrievably while an area is serving as a winter sports site. The production lost is irrecoverable, but the action is not irreversible because if the use changes, it is possible to resume timber production.

The use of these terms to include in discussions of environmental consequences is found in 40 CFR 1502.16. The definitions above are found in the Forest Service Handbook (FSH 1909.15, 05). The disclosure of effects that follows is organized by direct, indirect, and cumulative effects. Where necessary, irreversible commitments are identified, but generally timber harvest and associated activities are considered irrecoverable commitments of resources.

## Available Information

Much of the Tongass National Forest resource data resides in an electronic database formatted for a geographic information system (GIS). The Forest uses GIS software to assist in the analyses of these data. GIS data is available in tabular (numerical) format and as plots displaying data in map format. For this EIS, all the maps, and most of the numerical analyses, are based on GIS resource data.

There is less than complete knowledge about many of the relationships and conditions of wildlife, fish, forests, jobs, and communities. The ecology, inventory, and management of a large forest area comprise a complex and developing science. The biology of wildlife species prompts questions about population dynamics and habitat relationships. The interaction of resource supply, the economy, and communities is the subject matter of an inexact science. However, the basic data and central relationships are sufficiently well established in the respective sciences for the deciding official to make a reasoned choice between the alternatives and to adequately assess and disclose possible adverse environmental consequences. New or improved information would be very unlikely to reverse or nullify these understood relationships.

## Other Resources

Several resources and uses of the project area are likely to remain unaffected by the proposed action or alternatives, or would not be affected to a significant degree. While significant effects are not anticipated for any of these resources, there may be measurable differences in effects across the alternatives. These resources and the differences in the effects of the alternatives for each resource are discussed in the sections of this chapter following the Introduction. Resources or uses for which no measurable effects were identified are discussed briefly here.

### Air Quality

All of the action alternatives would have limited short-term effects on ambient air quality. Such effects, in the form of vehicle emissions and dust, are likely to be indistinguishable from other local sources of airborne particulates, including other motor vehicle emissions, dust from road construction and motor vehicle traffic, residential and commercial heating sources, marine traffic, and emissions from burning at sawmills. The action alternatives could result in short-term supplies of raw wood products to local mills. It is the responsibility of the mill owner or sort yard operator to ensure that mill emissions are within legal limits.

### Facilities

There are currently no logging camps or Forest Service administrative sites in the Finger Mountain project area. The Forest Service Corner Bay camp facility is located approximately 5 miles east of the project area. The Forest Service False Island camp facility is located approximately 7.5 miles southeast of the project area. The Sitka Ranger District office is located approximately 38 miles south of the project area in Sitka, Alaska.

## Land Status

Under the Alaska Statehood Act of 1959, the State of Alaska is entitled to a certain amount of Federal land. The State was also allowed to identify for selection more acreage than would ultimately be conveyed to State ownership. Other legislation granted Alaska Native corporations similar selection rights. There are no State or Alaska Native land selections or claims within the project area.

## Minerals

There are no known mineral occurrences of commercial value within the Finger Mountain project area. Field investigations and surveys by the U.S. Bureau of Mines have located no mines or prospects (USDI Bureau of Land Management 1999). The proposed action would have no direct or indirect impact on mineral resources. In general, the project would affect mining activities only by providing easier access for mapping and surveying due to new road construction in less developed or underdeveloped areas. Geologic mapping would also be enhanced by increased exposure due to road construction and quarry development.

## Plans of Other Agencies

The CEQ regulations implementing NEPA require a determination of possible conflicts between the proposed action and the objectives of federal, state, and local land use plans, policies, and controls for the area. The major land use regulations of concern are the Coastal Zone Management Act (CZMA), the State of Alaska's Forest Practices Act, and Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA). ANILCA Section 810 requirements pertain to subsistence; these are discussed in the subsistence section of this chapter.

The CZMA was passed by Congress in 1976 and amended in 1990. This law requires federal agencies conducting activities or undertaking development affecting the coastal zone to ensure that the activities or developments are consistent with approved state coastal management programs to the maximum extent practicable. The State of Alaska passed the Alaska Coastal Management Act in 1977, to establish a program that meets the requirements of the CZMA. In 1990, the State passed a revised Alaska Forest Practices Act. For federal timber sales, the Forest Practices Act provides the standards to be used for a determination of consistency with the Alaska Coastal Management Program. It also provides specific stream buffer requirements.

The Forest Service has evaluated the alternatives to ensure that the activities and developments affecting the coastal zone are consistent with approved coastal management programs to the maximum extent practicable. The 1997 Forest Plan standards and guidelines, and management practices, incorporated into the Finger Mountain project meet or exceed those indicated by the Alaska Coastal Management Program and the Alaska Forest Practices Act. The layout of all proposed harvest units complies with 1997 Forest Plan standards and guidelines for riparian areas, which meet or exceed the stream buffer requirements in the Forest Practices Act.

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## Biodiversity and Old-growth

### Biological Diversity

National Forest Management Act (NFMA) regulations define diversity as the distribution and abundance of different plant and animal communities and species (36 CFR 219). In managing forest ecosystems, biological diversity (or biodiversity) is defined as the variety of life forms and processes, including the complexity of species, communities, gene pools, and ecological functions, within the area covered by a land management plan (Bourgeron and others 1994). It is defined and understood in terms of the natural and historical numbers and distributions of plants and animals, habitats, and communities (Forest Plan FEIS 1997). The underlying assumption is that the maintenance of functioning ecosystems, achieved by protecting large, interconnected blocks of habitat, would conserve the species associated with them. Habitat must be well distributed over large geographical areas to allow interactions between individuals within and among populations and to provide the amounts, types, and needs of reproductive individuals. Therefore, biodiversity is evaluated at the landscape scale. Such a strategy is incorporated in the 1997 Forest Plan, which maintains a Forest-wide system of Old-growth Habitat Reserves (OGR) that are intended to preserve the integrity of the old-growth ecosystem and the species dependent on that ecosystem. This strategy, in addition to the implementation of 1997 Forest Plan standards and guidelines, was developed to maintain species viability. The issue of biodiversity is addressed in the following analyses of population viability, old-growth habitat, and habitat connectivity.

### Project Level Viability Analyses

NFMA regulations require that fish and wildlife habitats be managed to maintain viable populations of species well distributed across the Tongass National Forest. Population viability is defined as a fish or wildlife population that has the estimated number and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area (36 CFR 219 and the 1997 Forest Plan).

The 1997 Forest Plan contains a comprehensive conservation strategy using a system of OGR designed to provide old-growth habitats in combination with other non-development Land Use Designations (LUD) to maintain viable populations of native and desired non-native fish and wildlife species and subspecies that may be associated with old-growth forests (Forest Plan 1997, p. 3-76). This strategy, in addition to the implementation of 1997 Forest Plan standards and guidelines, was developed to maintain species viability.

Under the 1997 Forest Plan, project areas are not expected to independently maintain viable populations because of their relatively small size. However, management activities in such areas do need to consider project-level contributions to the Forest-wide strategy. This includes maintaining OGR and other components of the overall strategy such as riparian, beach, estuary, and other species-specific key habitats and connectivity between OGR and non-development LUDs. The application of the 1997 Forest Plan standards and guidelines is integral to protecting and providing habitat to maintain viable fish and wildlife populations.

### Old-Growth Forest

Old-growth forests are defined in the 1997 Forest Plan (p. 7-27) as “ecosystems distinguished by the later stages of forest stand development that differ significantly from younger forests in structure, ecological function, and species composition. Old-growth forest is characterized by a patchy, multi-layer canopy; trees that represent many age classes; large trees that dominate the overstory; large standing dead (snags) or decadent trees; and higher accumulations of large down woody material. The structure and function of an old-growth ecosystem will be influenced by its stand size and landscape position and context.” In Southeast Alaska, old-growth forests are

primarily comprised of western hemlock and Sitka spruce (Schoen, Kirchoff and Hughes 1988, p. 1) that are maintained by high frequency, low magnitude disturbance (usually wind) events (Brady and Hanley 1984 from Deal 2001, p1.). These natural disturbances result in gap-phase replacement (Alaback and Juday 1989 and Lertzman and others 1996 in Deal 2001, p. 1). Large trees that die and fall to the forest floor create openings or “gaps” that allow light to penetrate to the forest floor and release understory vegetation. The combination of a dense canopy with scattered small openings that is characteristic of old-growth forests allows forage to grow under the openings, while the large limbs within the canopy provide thermal insulation and intercept enough snowfall to allow access to forage during the winter. Large dead or defective trees provide nesting sites for martens, eagles, wrens, and chickadees, as well as feeding sites for woodpeckers, sapsuckers, brown creepers, and others. Woody debris provides wildlife habitat and provides micro-sites on which seedlings may grow.

A system of large, medium, and small OGR was designated in the 1997 Forest Plan to maintain contiguous blocks of old-growth forest habitat to support viable and well-distributed populations of old-growth associated species and subspecies (Forest Plan 1997, p. 3-81). The Finger Mountain project area contains six small OGR. The project area is bordered by a large OGR to the north that encompasses the entire Kadashan drainage, a medium OGR to the northwest that encompasses Seal and Long Bays, and a congressionally designated LUD II Wilderness area that contains the Finger River drainage to the southwest. Although not designated as OGR, non-development LUDs (i.e., LUD II, Wilderness, and Semi-remote Recreation) also provide habitat to maintain the integrity of the old-growth forest ecosystem (Forest Plan 1997, p. K-1).

The 1997 Forest Plan requires that a small OGR be maintained in each VCU where larger reserves are not present (either under the Old-growth Habitat LUD or other non-development designations) and includes specific habitat criteria to follow in locating these reserves (Forest Plan 1997, p. 4-120 and Appendix K). The 1997 Forest Plan also requires that 50 percent of the small OGR be in productive old-growth (POG) habitat. POG is defined as having a timber volume of greater than eight thousand board feet per acre and is defined as volume strata low, medium, and high in the GIS database (Forest Plan 1997, p. 7-31). POG generally provides important cover and forage habitat for wildlife as a result of the dense canopy, which reduces snow accumulations in the understory during the winter but is open enough to provide understory vegetation during the spring, summer, and fall. High volume POG (HPOG) includes the largest trees and is defined as high volume strata in the GIS database (Forest Plan 1997, p. K-1).

An estimated 16 percent (11,249 acres) of the Finger Mountain project area (72,780 acres) is designated in six small OGR, one within each VCU, (Figure BD-1), and 55 percent (6226 acres) of this area is POG habitat (Table 3-1). The 1997 Forest Plan requires that small OGR comprise 16 percent of VCU acres (p. K-1) or that they are allocated within adjacent watersheds or ecological boundaries (Forest Plan, p. K-2) and that 50 percent of this area is in POG.

**Insert Figure BD-1 (8.5 by 11 inch black and white map)**

**Title: Existing and Additions to  
Old-Growth Reserves Proposed  
for the No Action and Action  
Alternatives for the Finger  
Mountain Project Area.**

**Filename: bd-1.ps**

The location, size, and habitat components of OGR were assessed as required by the 1997 Forest Plan (Forest Plan 1997, Appendix K-1). Interagency reviews of small OGR were conducted at the project level as required by the 1997 Forest Plan to determine whether reserves meet 1997 Forest Plan requirements (February 22, 1999 and April 8, 2003). VCUs 233, 234, and 246 comply with and exceed with 1997 Forest Plan standards for OGR as defined in Appendix K (Forest Plan 1997, p. K-1C). An additional 471 acres of OGR and 521 acres of POG habitat were designated by the 1997 Forest Plan within these VCUs. Based on watershed boundaries, the small OGR in VCU 230 meets 1997 Forest Plan standards as described in Appendix K (p. K-2B). Although no harvest activities are proposed to occur in VCU 231 or 232, small OGR in these VCUs do not currently comply with 1997 Forest Plan standards that require small OGR to include 16 percent of the VCU acres. The Interagency review determined that the placement, size, and composition of small OGR were consistent with 1997 Forest Plan standards and guidelines with the addition of 476 acres (315 acres in POG) to VCU 231 and 117 acres (110 acres in POG) to VCU 232 (Figure BD-1).

**Table 3 - 1**  
**VCU Acres, Small Old-growth Habitat Reserves, and POG Habitat as Currently Mapped in the 1997 Forest Plan within the Finger Mountain Project Area**

VCU	Total VCU Acres	Current Acres of Small OGR	Acres of OGR Required	Difference from required OGR (acres)	Acres of POG in OGR	Minimum Acres of POG required	Difference from required POG (acres)
230	9,396	1,162	1,503	-341 <sup>1</sup>	833	752	81
231	18,924	2,588	3,028	-440	1,396	1,514	-118
232	11,260	1,717	1,801	-84	905	901	4
233	10,102	1,968	1,616	352	918	808	110
234	5,807	944	929	15	526	465	61
246	17,291	2,871	2,767	104	1,648	1,383	265
<i>Total</i>	<i>72,780</i>	<i>11,250</i>	<i>11,644</i>	<i>-394</i>	<i>6,226</i>	<i>5,823</i>	<i>403</i>

<sup>1</sup> Meets 1997 Forest Plan standards and guidelines based on watershed boundaries

Source: Suminski and Lutz 1999; Stangl 2003.

## Habitat Connectivity

Habitat connectivity should be addressed at the project level to assess whether blocks of contiguous old-growth forest habitat between large and medium reserves and other natural setting LUDs (non-development) are maintained (Forest Plan 1997, p. 4-120). Maintenance of habitat corridors is important to minimize isolation and decline of wildlife species associated with the old-growth blocks (Harris 1984). The connectivity, or corridors, between old-growth habitat in a landscape may be as significant to maintaining diversity as the size of the old-growth habitat (Noss 1983). Corridors can function in different ways, depending on their width and other characteristics.

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The distribution of old-growth forested habitat, or POG, is important in assessing habitat connectivity between OGR. Riparian areas, beach fringe, estuaries, and other areas (including stands deemed inoperable for timber harvest because of unstable soils, steep slopes, economic isolation, or other factors) can also provide connectivity between old-growth blocks (USDA 1998b, p. 14). Using the division of old-growth timber volume derived from the interpreted timber type data GIS layer (TIMTYPE) as a predictor of large diameter trees, the availability and distribution of old-growth habitat can be assessed two ways. Volume strata use timber volume, soil, and slope information as an indicator of productive forest habitat to assess POG habitat and highly productive old-growth habitat (HPOG). In contrast, structure mapping uses volume class (VC) and stand density as an indicator of canopy texture. Coarse canopy textured stands are associated with tall, large diameter trees on highly productive sites (e.g., alluvial fans) with low to moderate canopy closures and coarse canopy texture. They are defined as VC 5 on north facing slopes (VC 5-N) and all VC 6 and 7 stands (VC 6/7) (Caouette and others 2000). Table 3-2 shows that within forested habitat (9658 acres), approximately 65.5 percent of the OGR acreage is in higher volume strata habitat (POG), and an estimated 6.7 percent (496 acres) of these stands have coarse canopy texture (VC 5-N and VC 6/7). An estimated 60 percent of designated development LUD forested habitat (46,064 acres) is in POG, and an estimated 6 percent (2766 acres) of these stands have coarse canopy texture (VC 5-N and VC 6/7) (Table 3-3).

**Table 3 - 2**  
**Percentage of Productive (POG) and Highly Productive Old-growth (HPOG) Volume Strata and Coarse Canopy of Forested Habitat within OGR in the Finger Mountain Project Area**

VCU	Forested Non-Dev. Acres <sup>1</sup>	Volume Strata		Coarse Canopy	
		% POG <sup>2</sup>	% HPOG <sup>3</sup>	% VC 5-N <sup>4</sup>	% VC 6 /7 <sup>5</sup>
230	1,008	83	7	0	6
231	2,075	67	13	4	0
232	1,400	65	14	10	0
233	1,722	53	9	2	0
234	851	62	14	14	4
246	2,602	63	10	0	0
<i>Total/Average</i>		<i>9,658</i>	<i>66</i>	<i>11</i>	<i>2</i>

<sup>1</sup>Forested acres are National Forest System stands that are classified as productive or non-productive forested habitat.

<sup>2</sup>POG is equivalent to low, medium, and high volume strata.

<sup>3</sup>HPOG is equivalent to high volume strata.

<sup>4</sup>VC 5-N are stands of medium to large diameter trees that are characterized by coarse and fine canopy texture.

<sup>5</sup>VC 6/7 are stands of tall, large diameter trees on highly productive sites (e.g., alluvial fans) that are characterized by low to moderate canopy closures and coarse canopy texture.

Source: Stangl 2003

**Table 3 - 3**

**Percentage of Productive (POG) and Highly Productive Old-growth (HPOG) Volume Strata and Coarse Canopy of Forested Habitat within Development LUDs (Timber Management, Modified Landscape and Scenic Viewshed) in the Finger Mountain Project Area**

VCU	Forested Dev. LUD Acres <sup>1</sup>	Volume Strata % POG <sup>2</sup>	% HPOG <sup>3</sup>	Coarse Canopy % VC 5-N <sup>4</sup>	% VC 6 / <sup>5</sup>
230	6,227	60	5	3	1
231	10,415	61	18	4	5
232	6,804	67	20	3	6
233	6,853	58	12	7	2
234	4,439	58	12	3	3
246	11,326	58	8	0	0
<i>Total/Average</i>	<i>46,064</i>	<i>60</i>	<i>13</i>	<i>3</i>	<i>3</i>

<sup>1</sup>Forested acres are National Forest System stands that are classified as productive or non-productive forested habitat.

<sup>2</sup>POG is equivalent to low, medium, and high volume strata.

<sup>3</sup>HPOG is equivalent to high volume strata.

<sup>4</sup>VC 5-N are stands of medium to large diameter trees that are characterized by coarse and fine canopy texture.

<sup>5</sup>VC 6/7 are stands of tall, large diameter trees on highly productive sites (e.g., alluvial fans) that are characterized by low to moderate canopy closures and coarse canopy texture.

Source: Stangl 2003

## Direct and Indirect Effects

### Effects on Biodiversity

The Finger Mountain project area is located in the East Chichagof biogeographic province. The 1997 Forest Plan identifies specific measures to maintain old-growth connectivity and therefore population viability within this province. Measures taken to maintain old-growth connectivity for this project included locating OGR to provide for connectivity from north to south (South Crab to Broad Finger) and east to west (along the shores of Tenakee Inlet and Peril Strait) and applying specific standards and guidelines to reduce habitat fragmentation and retain habitat structure. The effects of the proposed action on OGR, POG habitat, and connectivity were addressed early on and factored into the initial planning process in unit selection and design. Units that were considered high quality wildlife habitat, units where heavy use by wildlife was observed, and units where connectivity was considered a factor were dropped from consideration or designed to eliminate or reduce effects. All action alternatives comply with 1997 Forest Plan standards and guidelines to maintain biodiversity.

The 1997 Forest Plan includes a forest-wide habitat conservation strategy designed to ensure adequate habitat to maintain viable fish and wildlife populations. The main components of the forest-wide habitat conservation system within the Finger Mountain project area are the six small OGR, the adjacent large and medium OGR, and the adjacent Wilderness Area. All applicable 1997 Forest Plan standards and guidelines that are also integral parts of the strategy (e.g., riparian management areas, beach fringe protection, landscape connectivity, and the goshawk and marten guidelines) are fully incorporated into the Finger Mountain action alternatives. In addition, units proposed for harvest in action alternatives were selected and designed to preserve the integrity of old-growth habitat and to maintain connectivity. Harvest activities will not occur within OGR; therefore, there will be no direct effects to OGR as a result of the action alternatives. The location, size, and habitat components of OGR were assessed as required by the 1997 Forest Plan (Appendix K-1). Interagency reviews of small OGR determined that the placement, size, and

## 3 Environment and Effects

composition of small OGR were consistent with 1997 Forest Plan standards and guidelines with the addition of habitat in VCUs 231 and 232. All alternatives will include the Interagency recommended additions of 476 acres (315 acres in POG) to VCU 231 and 117 acres (110 acres in POG) to VCU 232 (Figure BD-1). With this addition, the No-Action and action alternatives will comply with the 1997 Forest Plan standards for small OGR with the proposed addition of old-growth habitat as defined in Appendix K.

The amount, location, and type of modification to POG habitat can directly affect connectivity within the project area. Clearcut or even-age harvest has more of an impact on forest stand structure and species composition than partial or two-age cutting. Following clearcut logging of POG forest, the stands that subsequently develop are even-aged (Harris and Farr 1974) and may contain a higher percentage of Sitka spruce and a lower percentage of Alaska cedar. Clearcutting generally differs from natural disturbances in that it represents a large-scale change rather than dispersed small partial blowdown patches. It also differs in that nearly all trees are felled, whereas in natural disturbances many trees remain standing or partially standing (Hansen and others 1991). Clearcutting generally results in the rapid development of conifers and a decline in understory plant abundance as a result of stem exclusion.

The harvest units for all Finger Mountain action alternatives differ from traditional clearcutting in that 10 to 30 percent of the timber in most units will be retained. Retained trees will most likely be in clumps or "islands" within a unit or may be more evenly spaced throughout the unit. In either case, the actual opening created by harvest will be smaller than the unit size, and mature trees will remain as part of the unit. Thus, many Finger Mountain harvest units will more closely mimic stand structures developing after natural disturbance than following a clearcut harvest (see the Silviculture and Timber Management section for more detail on harvest methods and applications). Where partial cutting or 25 percent individual tree selection is proposed, POG habitat will be maintained. In addition, partial cutting appears to maintain diverse and abundant plant understories that are comparable to plant communities typically found in old-growth stands (Deal 2001, p. 2074).

Table 3-4 displays the anticipated reduction of POG forest as a result of harvest (excluding 25 percent individual tree selection) by VCU and for the project area. Action alternatives propose to harvest between 205 and 1109 acres of POG habitat. Alternative B will harvest 3 percent of the total POG (171 acres within HPOG) within three VCUs in the project area and involves 902 acres of clearcutting. Alternative D will harvest 3 percent of the total POG (137 acres in HPOG) within three VCUs and will clearcut harvest 816 acres. Alternative F will harvest 2 percent of the POG (75 acres in HPOG) within two VCUs and will clearcut 187 acres. Alternative H proposes to harvest 205 acres of POG (15 acres in HPOG) or 1 percent of the total available POG within 2 VCUs. Overall, between 97 percent and 99 percent of the existing POG will be maintained in the project area. Harvest activities will not occur in areas designated as non-development LUDs or OGR.

**Table 3 - 4**  
**Acres and Percent of POG Harvested by Alternative (Excluding 25 Percent Individual Tree Selection)**

Existing POG		POG Proposed for Harvest									
		ALT A No-Action		ALT B		ALT D		ALT F		ALT H	
VCU		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
230	4,572	395	9	326	7	0	0	0	0	0	0
231	7,748	0	0	0	0	0	0	0	0	0	0
232	5,439	0	0	0	0	0	0	0	0	0	0
233	4,910	286	6	363	7	491	10	173	4		
234	3,095	229	7	420	14	279	9	32	1		
246	8,203	0	0	0	0	0	0	0	0		
<i>Total</i>	<i>33,967</i>	<i>910</i>	<i>3</i>	<i>1109</i>	<i>3</i>	<i>770</i>	<i>2</i>	<i>205</i>	<i>1</i>		

Source: Stangl 2003

Table 3-5 displays the amount of coarse canopy forest proposed for harvest by each alternative (excluding 25 percent individual tree selection). Alternatives B and D propose to harvest between 82 and 91 acres (3 percent) and Alternatives F and H propose to harvest 0 to 13 acres of total coarse canopy habitat within the project area (3262 acres).

**Table 3 - 5**  
**Acres and Percent of Coarse Canopy Forest Harvested by Alternative (Excluding 25 Percent Individual Tree Selection)**

Existing Coarse Canopy		Acres of Coarse Canopy Stands Proposed for Harvest <sup>1</sup>									
		ALT A No-Action		ALT B		ALT D		ALT F		ALT H	
VCU		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
230	305	23	8	23	8	13	4	0	0	0	0
231	1,042	0	0	0	0	0	0	0	0	0	0
232	753	0	0	0	0	0	0	0	0	0	0
233	663	27	4	21	3	0	0	0	0	0	0
234	390	32	8	47	12	0	0	0	0	0	0
246	109	0	0	0	0	0	0	0	0	0	0
<i>Total</i>	<i>3,262</i>	<i>82</i>	<i>3</i>	<i>91</i>	<i>3</i>	<i>13</i>	<i>0</i>	<i>0</i>	<i>0</i>		

1 Coarse canopy stands include VC 5-N and all VC 6/7 stands that are characterized by coarse canopy texture.

Source: Stangl 2003

# 3 Environment and Effects

Although there will be a slight reduction in POG and coarse canopy habitat, units were designed and selected to maintain dispersal corridors for wildlife in the project area. Dispersal corridors include the areas along the shores of Tenakee Inlet and Peril Strait, and between Tenakee Inlet and Peril Strait via the pass between south Crab (VCU 233) and Broad Finger Creek (VCU 246).

## Cumulative Effects

An analysis of cumulative effects must include past, present and “reasonably foreseeable future actions” (40 CFR 1508.7). For the action alternatives, individual sale offerings are likely to occur over the next five years, and harvest activities may extend beyond that time. The Oly Creek drainage is adjacent to the project area and will be considered for future timber planning. This area borders Broad Creek, which is the only timber sale that is proposed on the Tongass 10-year plan for future harvest within the Finger Mountain project area. However, Broad Creek lies within VCU 246 and is designated as Roadless Area. Other timber management projects that may occur in the project area include the thinning of previously harvested stands.

Harvest activities that have been proposed to occur in the vicinity of Finger Mountain include the Indian River Timber Sale. Located across Tenakee Inlet in VCUs 216, 220, 222, and 204, the ROD for the Indian River Environmental Impact Statement identifies 23.8 MMBF on 1,559 acres planned for harvest. Any potential harvest resulting from this analysis is separated from the Finger Mountain project area by Tenakee Inlet and the ridge located behind the City of Tenakee Springs.

Outside of the project area, the False Island and Corner Bay timber sales are proposed for future harvest. The False Island project area lies on the southeast portion of Chichagof Island. The project is a proposal to harvest an estimated 22,000 MBF (44,000 hundred cubic feet) of sawlog and utility timber on approximately 1,400 acres in potentially one or more timber sales. The Corner Bay project area lies adjacent to the Kadashan drainage that is designated as LUD II. A proposal has not been developed for this project area. The Finger Mountain Timber Sale(s) project will be incorporated into the NEPA cumulative effects analysis for these projects. No other adjacent harvest is planned at this time.

Timber harvest activities that occurred in the past have reduced POG forested habitat. Within the project area, an estimated 184 acres were harvested between 1920 and 1941 and approximately 1700 acres were harvested between 1956 and 1986. Clearcut harvest has resulted in reduced connectivity along riparian areas, beach fringe, and POG habitat at different elevations within the watersheds (Table 3-6).

**Table 3 - 6**

**Acres and Percentage of POG Forest in the Project Area in 1999 Compared to the Amount of POG Present in the Project Area in 1956 (Prior to Large-scale Harvest Activities)**

VCU	Acres of POG in 1956	Acres of POG in 1999	Percentage of 1956 POG Remaining in 1999
230	4,826	4,572	94%
231	7,969	7,748	97%
232	5,775	5,439	94%
233	5,211	4,910	94%
234	3,610	3,095	86%
246	8,199	8,203	100%
<i>Total</i>	<i>35,590</i>	<i>33,967</i>	<i>95%</i>

Source: Suminski and Lutz 1999; Stangl 2003

Table 3-7 displays the cumulative change (reduction) in project area POG forest as a percentage of that which existed in 1956. Included are the percentages harvested to date (which is the same for all alternatives) and the percentages resulting from the additional harvest under each Finger Mountain action alternative. The projection of POG remaining is calculated as if all feasible timber was harvested using a clearcut harvest prescription. This will be a maximum harvest level; it is likely that the actual harvest level will be much less.

To further address cumulative effects, potential harvest in the Finger Mountain project area over the next five decades can be projected. This projection assumes that the remaining available, suitable POG will be harvested and that the area's second-growth stands will be approaching harvestable age (63 to 93 years old). There are currently 4,604 acres of POG available and feasible for harvest scheduling (see Table 3-28 in the Silviculture and Timber Management section of this chapter). Assuming all available acres are harvested by the end of the next five decades (by about 2050), the POG forest in the planning area will be reduced to 82 percent of that which existed in 1956 (Table 3-7). However, this does not take into account acres of timber management and other development LUDs that are currently designated as Inventoried Roadless Area. In addition, the OGR system of the 1997 Forest Plan will remain in place and ensure a high likelihood that habitat will maintain viable populations of all old-growth associated species.

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**Table 3 - 7**  
**POG Forest Remaining and Projected, Using 1956 Levels as a Baseline for Comparison**

POG Remaining as of 1999	POG Following Alt. B	POG Following Alt. D	POG Following Alt. F	POG Following Alt. H	Projected POG in 2054
95%	92%	92%	93%	94%	82%

Source: Suminski and Lutz 1999; Stangl 2003

Prior to timber harvest activities, the main dispersal corridors for wildlife throughout the project area were most likely along the shores of Tenakee Inlet, along the shores of Peril Strait, and between Tenakee Inlet and Peril Strait via the pass between south Crab (VCU 233) and Broad Finger Creek (VCU 246). Although some harvest has occurred in these corridors, connectivity is still intact and will remain functional in all alternatives.

## Management Indicator Species and Endemic Terrestrial Mammals

FSM 2621.3 requires that the effects of a proposed action to Management Indicator Species (MIS) be assessed and that 1997 Forest Plan requirements, goals, and objectives for these species are met at the project level (FSM 2621.4). MIS are species of vertebrates and invertebrates whose response to land management activities can be used to predict the likely response of other species with similar habitat requirements. Applicable direction is included in the 1997 ROD and in the 1997 Forest Plan, Chapters 3 (Land Use Designations) and 4 (Forest-wide Standards and Guidelines) and Appendix K. This analysis tiers to the wildlife analyses contained in the 1997 Forest Plan FEIS, Chapter 3 and Appendix N.

The 1997 Forest Plan also requires an evaluation of the existence of rare or endemic terrestrial mammals. The objective is to maintain habitat to support viable populations and improve knowledge of habitat relationships of rare or endemic terrestrial mammals that may represent unique populations with restricted ranges (Forest Plan 1997, p. 4-119).

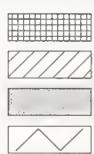
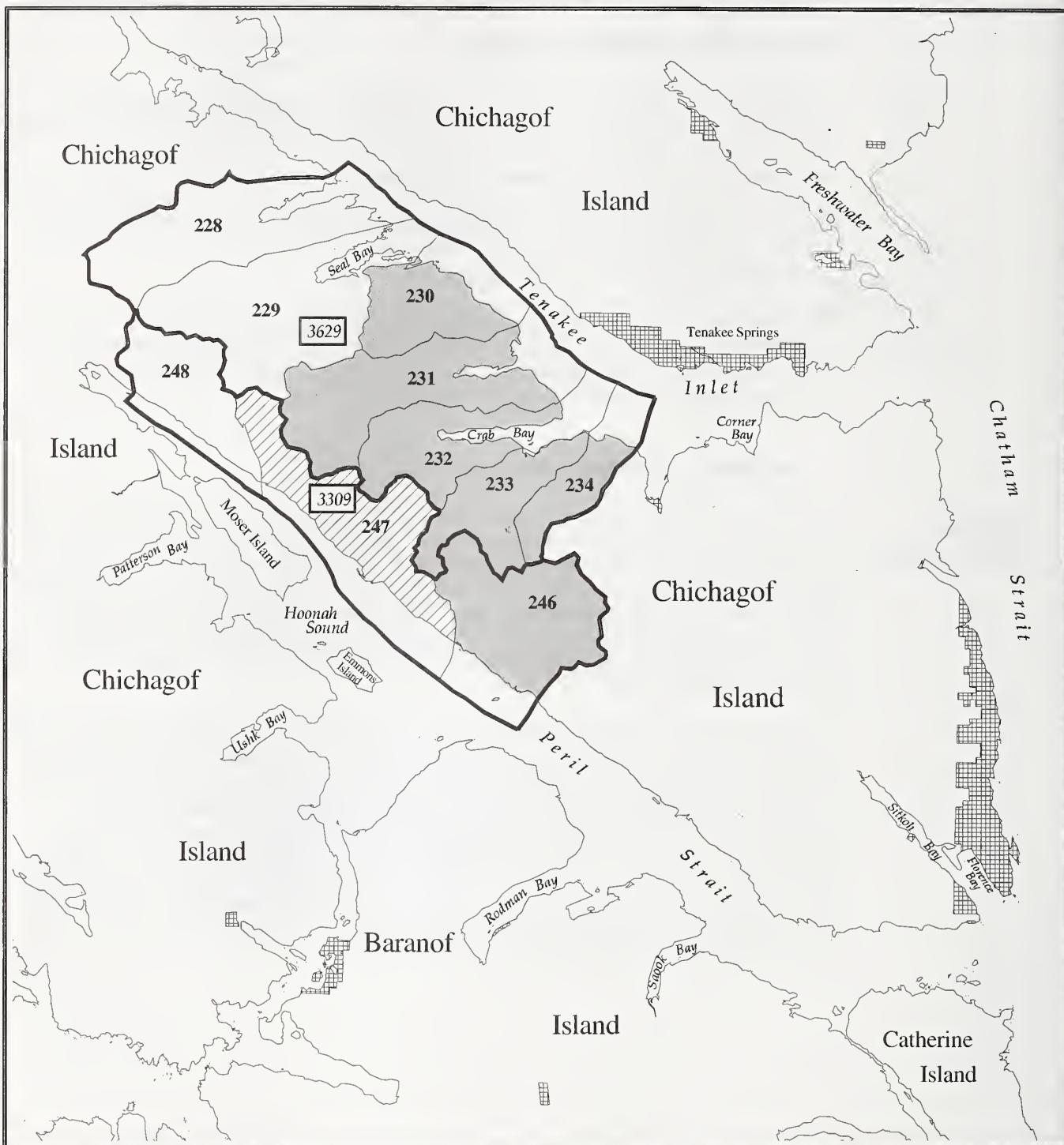
### Management Indicator Species

#### Affected Environment

The 1997 Forest Plan identified 13 animal and 4 fish species as management indicators (Forest Plan 1997, p. 3-352). MIS fish species, including pink salmon, coho salmon, Dolly Varden char, and cutthroat trout, are addressed in Chapter 3 under “Water, Soils, and Fish.” Other MIS are associated with the spruce and hemlock forests of Southeast Alaska that represent 98% of the POG forests of the Tongass National Forest. Table 3-8 lists the MIS that occur on Chichagof Island and describes the species’ habitat. The black bear, gray wolf and mountain goat do not occur in the Finger Mountain project area or on Chichagof Island; therefore, they were not considered in this analysis.

Habitat for these species will be assessed based on the project area or the Wildlife Analysis Area (WAA) boundaries. The project area is defined as the area within which VCUs 230, 231, 232, 233, and 246 are located. This area occurs within two WAAs: 3309 and 3629 (Figure Wildlife-1). WAAs are geographical areas defined by the Alaska Department of Fish and Game (ADF&G) to monitor and manage wildlife populations. Of the three VCUs in WAA 3309 (VCUs 246, 247 and 248), only VCU 246 (Broad Creek) is located in the project area. Of the seven VCUs (228-234) in WAA 3629, VCUs 228 (Long Bay) and 229 (Seal Bay) are not in the project area. Harvest activities are only proposed to occur in WAA 3629 in VCUs 230, 233, and 234. Analysis by WAA is conducted for deer and marten habitat capability numbers. All other analyses are conducted by project area and VCU.

Figure Wildlife-1  
Wildlife Analysis Areas (WAA) and Value Comparison Units (VCU).



Wildlife Analysis Area Boundary  
VCU Number  
VCU Boundary  
Wildlife Analysis Area Identifier



**Table 3 - 8**  
**1997 Forest Plan Final EIS Habitat Description for MIS Species that Occur within the Project Area**

Species	Habitat Description
Brown Bear	This species is associated with areas from sea level to alpine. The late-summer season, when bears concentrate along low-elevation valley bottoms and streams, has been identified as the most critical or limiting period.
Bald Eagle	This species nests primarily in old-growth habitat along the coast and within riparian areas.
River Otter	This species is associated with coastal and fresh water aquatic environments and immediately adjacent (within 100-500 feet) upland habitats.
Vancouver Canada Goose	This species uses wetlands in the estuary, riparian and upland areas of the forest.
Brown Creeper	This species is an uncommon permanent resident of SE Alaska and is associated with high volume old-growth forest habitat with large trees.
Hairy Woodpecker	This species is an uncommon permanent resident of SE Alaska. They are primary excavators that use old-growth forest habitat with snags and partially dead trees for nesting and foraging.
Red-breasted Sapsucker	Red-breasted Sapsuckers are summer residents. They are primary excavators that use old-growth habitats with snags.
Red Squirrel	This species was transplanted to Chichagof Island. Red squirrels are abundant and occupy forests with cone-producing trees and cavities in trees and snags.
Sitka Black-tailed Deer	This species uses a variety of vegetative communities throughout the year but is most limited by lower elevation old-growth forest habitat that intercept snow and provide understory forage plants during the winter season.
Marten	Marten were transplanted to Chichagof Island. Lower elevation old-growth forest habitat used during the winter season is the most limiting for this species.

Source: USDA 1997, pp. 3-352 to 3-357.

## Endemic Terrestrial Mammals

Numerous small mammal surveys have been conducted on Chichagof Island and in the Kadashan drainage adjacent to the project area; therefore, additional surveys were not conducted specifically for this project. Kris Rutledge (USFS Biologist, Hoonah Ranger District), for example, performed a small mammal trapping study in conjunction with Rod Flynn's (ADF&G) marten study. Arlene Doyle (USFS Wildlife Biologist, Juneau Ranger District) completed surveys for long-tailed voles. Mirav ben David (graduate student) surveyed in the Kadashan drainage. Steven MacDonald (University of Arizona) conducted several studies for the University of Alaska, Fairbanks (Joe Cook, Curator). Finally, Doreen Parker and Edward West conducted bat surveys on Chichagof Island. MacDonald and Cook (1999, Table 4) identified terrestrial mammals that have been documented to occur on Chichagof Island. They include but are not limited to the following:

- *sorex cinereus* (common shrew),
- *sorex alaskanus* (Glacier Bay water shrew),

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- *peromyscus keeni* (Keen's mouse),
- *microtus oeconomus* (root vole),
- *microtus longicaudus* (long-tailed vole),
- *myotis lucifugus* (little brown myotis),
- *Lutra canadensis* (river otter), and
- *Tsmiasciurus hudsonicus* (red squirrel).

Because rare or endemic terrestrial mammal populations have not been identified to occur in the project area or on Chichagof Island, action alternatives will not have an effect.

## MIS Effects Analysis

All of the MIS species are associated with POG spruce and hemlock forests. Because OGR and POG forests are important habitat components for these species, this analysis focuses on the effects of proposed activities on old-growth habitat and habitat connectivity. Although each action alternative includes harvest of forested wildlife habitat, some key habitats are protected by 1997 Forest Plan standards and guidelines. These include OGR, most riparian habitats, (the exception being along Class IV streams), all beach fringe and estuary fringe habitats, high-value marten habitat, and wind management areas. In addition, the project area is bounded by one large OGR, one medium OGR, and a congressionally designated Wilderness Area. Reference the Biodiversity section of this document for additional information on the location of and effects on OGR.

Harvest activities, particularly clearcut harvests that occur in POG habitat, have the potential to alter stand structure and diversity. Although the initial loss of biodiversity following clearcutting is well documented, there are also long-term changes to the stand. Following the clearcut harvest of trees, there is the regeneration and rapid establishment of conifers, shrubs, and herbaceous plants. This stand initiation stage results in an understory biomass peak after about 15 to 25 years. After about 25 to 35 years, the stand reaches the stem exclusion stage that results from the closure of the canopy. During this period, stands are extremely dense with conifers that are generally uniform in diameter and height distributions. These stands lack the multi-layered, diverse structure and shrub-herb component that is found in old-growth stands (Deal 2001). The stem exclusion stage can persist for 50 to 100 years in Southeast Alaska (Alaback 1984) and can have implications for wildlife that depend on understory plants as forage.

Clearcutting or even-aged management and partial harvest are proposed in the Finger Mountain action alternatives. However, the harvest units for all of the action alternatives differ from traditional clearcutting in that 10-35 percent of the timber in most units will be retained. Retained trees will most likely be in clumps or "islands" within a unit or may be more evenly spaced. Although cover will still be removed, the actual opening created will be smaller than the unit size, and mature trees will remain as part of the unit. In addition, some alternatives propose 25 percent individual tree selection partial harvest. In these stands, canopy structure and understory vegetation will be maintained, and POG habitat will not be reduced (Deal 2001, p. 2076).

It is important to note that, during the project planning process, wildlife habitat was assessed and evaluated for the entire proposed unit pool within the project area. Each unit was reviewed to assess the quality of habitat for wildlife. Evaluations were based on local knowledge, interagency input, information acquired from field surveys, review of aerial photos, and review of literature, past databases (GIS), and surveys. Units proposed for harvest in action alternatives were selected and designed to preserve important wildlife habitats and the integrity of old-growth habitat and to maintain POG habitat and connectivity.

The cumulative effects analysis will consider past, present, and potential future activities within the project area. Activities that have occurred and are likely to occur in the project area are

primarily recreation and timber harvest activities. Cumulative activities that have and are likely to occur in the project area include but are not limited to: outdoor recreation vehicle use, boating, fishing, hunting, berry picking, camping, timber harvest, and thinning of previously harvested stands. Within the project area, an estimated 184 acres were harvested between 1920 and 1941, and approximately 1700 acres were harvested from 1956 to 1986. Activities that are proposed to occur in the project area include continued recreation use; thinning of harvested stands; road maintenance; road, timber, stream, wildlife and other surveys; and general maintenance and monitoring activities as required by the 1997 Forest Plan.

Broad Creek is the only timber sale that is proposed on the Tongass 10-year plan for future harvest within the Finger Mountain project area. However, Broad Creek lies within VCU 246 and is designated as Roadless Area. Other timber management projects that may occur in the project area include the thinning of previously harvested stands.

Harvest activities that have been proposed to occur in the vicinity of Finger Mountain but outside of the project area include Indian River, False Island, and Corner Bay Timber Sales. The ROD for the Indian River Environmental Impact Statement identifies 23.8 MMBF on 1,559 acres located across Tenakee Inlet planned for harvest. Any potential harvest resulting from this analysis is separated from the Finger Mountain project area by Tenakee Inlet and the ridge located behind the City of Tenakee Springs. The False Island project area lies on the southeast portion of Chichagof Island. The project is a proposal to harvest an estimated 22,000 MBF (44,000 hundred cubic feet) of sawlog and utility timber on approximately 1,400 acres in potentially one or more timber sales. The Corner Bay project area lies adjacent to the Kadashan drainage, which is designated as LUD II. A proposal has not been developed for this project area. The Finger Mountain Timber Sale(s) will be incorporated into the NEPA cumulative effects analysis for these projects. No other adjacent harvest is planned at this time.

### **Brown Bear**

Chichagof Island supports a high density of bears partially because of the presence of riparian areas that support salmon (Unit 4 Brown Bear Management Team 2000, p. 17). In 2002, it was estimated that the bear density on northeast Chichagof Island was 1.7 bears per square mile (Whitman 2003). During the late summer, bears concentrate along low-elevation salmon streams to feed on salmon. Foraging on salmon provides a readily accessible and efficient way for bears to build the fat reserves they need to sustain them throughout the winter (Unit 4 Brown Bear Management Team 2000, p. 17). Although brown bears use large areas of forested habitat, important habitat considerations include healthy riparian areas that support salmon and that are isolated from human disturbance.

The 1997 Forest Plan (p. 4-114) and TPIT (p. A-5) require consultation with ADF&G to identify and manage important brown bear foraging habitat sites and require an evaluation of the need for additional protection of important foraging habitat.

### **Direct Effects**

Direct effects to brown bears generally result from increases in open, motorized road density, which increases the potential for bear mortality and impacts to salmon habitat. Research has demonstrated that bear use of salmon streams is concentrated within an estimated 500 feet of streams during the peak period of salmon runs (Unit 4 Brown Bear Management Team 2000, p. 17). Therefore, the 1997 Forest Plan requires that the need for additional protection of important bear foraging sites be assessed at the project level (Forest Plan 1997, p. 4-114). During the planning process, units proposed for harvest in action alternatives were selected and designed to preserve important wildlife habitats and the integrity of old-growth habitat and to maintain POG habitat and connectivity. Timber and stream survey data and local knowledge of the area were

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used to review units to assess whether they were located in important bear foraging sites (e.g., waterfalls, areas of concentrated trails, or resting sites). In addition, the Forest Service met (February 22, 1999 and October 3, 2000) and corresponded with representatives of the Alaska Department of Fish and Game (ADF&G) to evaluate the need for additional protection or survey of important brown bear foraging sites along streams in the project area. There were no specific issues identified with the placement of units in any alternative. Because important foraging sites were not identified as a result of surveys or the interagency meeting, and because riparian standards and guidelines, in combination with unit placement, protect anadromous fish habitat, there was no need to add additional buffers.

Motorized access can increase the opportunity for human-induced mortality of bears through legal hunting, defense of life or property, and illegal mortality (Unit 4 Brown Bear Management Team 2000, p. 20). The construction and reconstruction of roads will increase human access in the project area. The greatest increase in road access would occur during project implementation. Road access will decrease following project completion as road management objectives (RMOs) such as road closures are applied. There are currently 17.6 miles of road in the project area. Of this, 14.5 miles are closed to motor vehicle access and the other 2.7 miles are accessible only by high clearance vehicles. Alternative B would result in a temporary increase of 20.7 miles of new road and a total increase of 10.3 miles of open and maintained road upon project completion. Alternative D would result in a temporary increase of 14.7 miles of new road and a total increase of 1.9 miles of open and maintained road upon project completion. Alternative F would result in a temporary increase of 4.3 miles of new road and a total increase of 4.6 miles of open and maintained road upon project completion. Alternative H would result in a temporary increase of 3.6 miles of new road and a total increase of 3.5 miles of open and maintained road upon project completion. This increase in access increases the risk of mortality to bears by hunters and poachers using roads and defense of life and property (DLP) associated with logging camps. Based on the extremely low numbers of DLP bear kills in other logging camps (past and present), this was not considered to be a significant concern.

## Indirect and Cumulative Effects

The distribution and movement pattern of brown bears can be affected by the reduction in POG forest that reduces connectivity between OGR and non-development LUDs. An estimated one to three percent of POG habitat will be harvested as a result of action alternatives. However, due to the careful placement and design of units during the planning process and the application of 1997 Forest Plan standards and guidelines, forest connectivity will be maintained. This issue is addressed in detail in the Biodiversity section of this document.

## Riparian Dependent MIS

### Bald Eagle

The bald eagle represents a species that depends on beach fringe forest habitat. Southeast Alaska has the highest density of bald eagles in North America. The most recent population estimate (1992) was over 13,000 adult birds and approximately 8,000 nest sites. Bald eagles nest near areas that provide the best opportunities for searching for food, such as tide flats, open water, and rivers. They feed primarily on fish, but are known to feed on water birds, marine invertebrates, and carrion. Their nesting habitat is primarily old-growth trees along the coast and within riparian areas. Over 90 percent of known nests are within 500 feet of a saltwater beach. There are 61 known nest sites within the project area.

The U.S. Fish and Wildlife Service and the Forest Service maintain an interagency agreement for bald eagle habitat management in the Alaska Region, which includes standards and guidelines for regulating human disturbance within identified bald eagle use areas. These Bald Eagle and Riparian Forest-wide standards and guidelines are specifically designed to protect bald eagle nesting habitat and were applied in all alternatives. In accordance with the standards and

guidelines, a minimum 330-foot radius protective habitat management zone will be implemented around all identified nest trees. Proposed roads will be built at least 330 feet from bald eagle nest trees where feasible. New rock pits would be located at least 0.5 mile from nest trees. Where it is not feasible to avoid the nest tree buffer, a variance will be requested for approval from the U.S. Fish and Wildlife Service.

#### **Direct, Indirect, and Cumulative Effects**

Alternatives B and D would have the most impact on bald eagle habitat. There are two nests near the existing rock pit near the LTF at Inbetween. This pit has been evaluated and approved for variance from the interagency agreement with the U.S. Fish and Wildlife Service. In Crab Bay, there are five nest trees located within 330 feet of the existing road. There are three nest trees near the existing LTF at the mouth of Crab Bay. In Alternatives F and H, timber would be harvested in the South Crab and Fog Creek VCUs. In the South Crab VCU, there are five nest trees located within 330 feet of the existing road. There are also three nest trees near the existing LTF at the mouth of Crab Bay. All nest trees within 330 feet of an existing road would be evaluated under the variance process.

#### **River Otter and Vancouver Canada Goose**

River otters are associated with coastal and fresh water aquatic environments and the immediately adjacent (within 100-500 feet) upland habitats (Forest Plan FEIS 1997, p. 3-353). Beach characteristics affect the availability of food and cover. Adjacent upland vegetation is also important in providing cover. Old-growth forests with canopy cover and large-diameter trees and snags provide habitat for burrows and den sites

The Vancouver Canada goose is a game species that represents old growth and riparian habitats. They are primarily non-migratory and are found almost exclusively in Southeast Alaska. Unlike other subspecies of Canada geese, the Vancouver Canada goose uses forested habitats for nesting, brood rearing, and molting. They use trees for nest sites and perches during incubation, and rely primarily on forest understory plant species for food.

#### **Direct, Indirect, and Cumulative Effects**

None of the alternatives proposes timber harvest in riparian areas along streams, around lakes, or in the beach and estuary fringes. Beach, estuary and riparian buffers minimize risk to riparian habitats and fish habitat capability and minimize viability concerns for these species (Forest Plan FEIS 1997, p. 3-413). Forest-wide standards and guidelines for waterfowl management include providing a minimum distance of 330 feet between human activities and significant waterfowl areas, including important nesting habitats. These requirements, combined with the beach and estuary buffers, would protect habitat for these species.

#### **Cavity Dependent MIS**

Many species including woodpeckers, owls, hawks, waterfowl, bats, squirrels, martens, and otters nest or den in tree cavities in Southeast Alaska. Several of these species depend exclusively on cavities in the large-diameter snags characteristic of old-growth stands. Timber management activities tend to reduce dead and dying trees in older stands.

The hairy woodpecker, brown creeper, and red-breasted sapsucker are MIS that rely on old-growth forest habitat for nesting and foraging. The hairy woodpecker and red-breasted sapsucker are primary cavity excavators that use snags and partially dead trees for nesting and foraging. The availability of suitable winter habitat for roosting and foraging is an important constraint on the habitat suitability for these species. The brown creeper is associated with high-volume stands that include large-diameter, old trees that provide abundant prey. Red squirrels were transplanted

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to Chichagof Island in 1930 and 1931 as a potential prey species for marten. This MIS requires forests with cone-producing trees and cavities in trees and snags. Spruce trees and mature to old-growth forest have the highest values for red squirrel habitat.

Habitat for these species is best represented by snag and stand structure management that uses volume classes as an indicator of coarse canopy forest and stands associated with highly productive sites (e.g., alluvial fans). Action alternatives (excluding 25 percent individual tree selection) propose to harvest between 1 and 3 percent of the coarse canopy habitat within the project area. Refer to the Biodiversity section of this document for a detailed analysis of this issue.

Snag habitat does not appear to be a limiting factor in the project area and is maintained in OGR, non-development LUDs, and riparian, beach, and estuary buffers and by implementing marten standards and guidelines for snag retention. All planned units would retain at least three snags per acre, and future snag recruitment would be provided through the retention of 15 percent stand structure where there is high-value marten habitat. At a minimum, two snags per acre would be maintained in all units. Based on this information, habitat for snag-dependant species would be maintained throughout the project area.

## **Sitka Black-tailed Deer**

The Sitka black-tailed deer is an important game and subsistence species in Southeast Alaska. Although deer will utilize a wide range of habitat from shoreline to alpine, deer are seasonally associated with old-growth forests. Research conducted in Southeast Alaska indicates that low-elevation, high volume POG habitats are particularly important to deer, especially during severe winters (Schoen and others 1985; Hanley and Rose 1987; Yeo and Peek 1992). These mature old-growth stands intercept snow, provide thermal cover, and support the largest biomass of herb and shrub forage for deer (Alaback 1982; Schoen and others 1984). Following clearcut harvest, deer populations are impacted by the combination of increased snow accumulation that reduces forage availability and the conversion of winter habitat to second-growth stands. Closed-canopy young-growth (generally 25 to 30 years old) and older stands, if left untreated, provide little to no forage in any season due to the lack of light penetration to the forest floor.

## **Deer Habitat Modeling**

An interagency model (Suring and others 1992) developed to evaluate potential winter habitat capability was updated during the 1997 Forest Plan revision. The model was developed as a tool to assess the effects of action alternatives compared to past, present (No-Action Alternative), and future habitat suitability and capability of the project area. The model calculates habitat suitability indices (HSIs) based on timber volume strata, aspect, elevation, and typical snowfall. Low-elevation, high-volume old-growth stands with southern aspects and in low snowfall areas are assumed to provide the best quality deer winter habitat. Areas above 1500 feet in elevation are assumed to have no value as deer winter habitat.

HSI values are used to calculate and compare habitat capability and to estimate changes in habitat capability that result from timber harvest. An HSI of 1.0 represents a habitat capability of 100 deer per square mile; this is the multiplier used to convert HSI values into habitat capability numbers. Habitat capability is the theoretical number of deer that particular habitat types can be expected to support. It does not reflect actual known deer numbers but is used only for comparing potential impacts of action alternatives. The model estimates habitat capability based on the condition of previously harvested stands and stands proposed for harvest (e.g., stand initiation or stem exclusion) compared to the habitat capability that existed prior to large-scale timber harvest. Low-impact harvest prescriptions such as individual tree selection where only 25 percent of the basal area is removed were assumed to have less of an impact on deer habitat than

clearcuts because partial cutting maintains a diversity of plant communities in the understory and cover in the overstory (Deal 2001, p. 2076). All other harvest prescriptions were counted as clearcut by the model.

### Direct, Indirect, and Cumulative Effects

The deer habitat model was developed as a tool to assess the effects of action alternatives compared to past, present (No-Action Alternative), and future habitat suitability and capability of the project area. Therefore, direct, indirect, and cumulative effects of the proposed actions on deer habitat will be addressed in this section.

Table 3-9 displays the habitat capability that would remain following implementation of the action alternatives as compared to the existing habitat capability (2003 levels) and to the habitat capability assumed to be present before large-scale harvest occurred (1956 levels). Harvest activities will only occur in WAA 3629; therefore, habitat capability will not change in WAA 3309. The implementation of the action alternatives will result in a 0 to 2 percent reduction of habitat capability for the project area compared to the existing condition that assumes 100 percent habitat capability. Alternatives B and D would result in a 2 percent decrease in deer habitat capability from the current condition, Alternative F a 1 percent decrease, and Alternative H a less than 0.5 percent decrease.

The existing deer habitat capability for the Finger Mountain project area is 97 percent of the probable 1956 capability. The 3 percent reduction in habitat capability is due to large-scale logging and road building that converted high-value deer habitat into young growth stands. Combined with previous timber harvest, the model estimates that the implementation of the action alternatives will result in a 3 to 5 percent reduction of habitat capability for the project area. Because large-scale logging has not occurred in WAA 3309, the habitat capability is 99 percent of the deer habitat capability that existed in 1956. The 1 percent reduction is due to clearcuts that occurred along the beach from 1920 to 1941. Harvest activities are not proposed for this WAA so there would be no further reduction in deer habitat capability. Within WAA 3629, the greatest affect on deer habitat capability compared to the 1956 condition occurs in VCU 234 where the existing condition (Alternative A) is at 81 percent habitat capability. The implementation of Alternatives B, D, and F would reduce this to 78 percent. Alternative H would not further reduce deer habitat capability beyond the existing condition.

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**Table 3 - 9**

**Percent Deer Habitat Capability Remaining from 1956 Levels (Prior to Large-scale Harvest Activities) and 2003 Levels (Assuming Alternative A to be 100 percent) by Alternative**

WAA	VCU	Percent Habitat Capability Remaining Since 1956					Percent Habitat Capability Remaining from 2003 (Existing Condition)				
		ALT A	ALT B	ALT D	ALT F	ALT H	ALT B	ALT D	ALT F	ALT H	
3309	246	100	100	100	100	100	100	100	100	100	
	247	97	97	97	97	97	100	100	100	100	
	248	100	100	100	100	100	100	100	100	100	
WAA 3309 Average		99	99	99	99	99	100	100	100	100	
3629	228	100	100	100	100	100	100	100	100	100	
	229	94	94	94	94	94	100	100	100	100	
	230	95	92	93	95	95	96	97	100	100	
	231	96	93	96	96	96	97	100	100	100	
	232	92	89	90	92	92	97	97	100	100	
	233	91	88	88	88	89	97	96	97	98	
	234	81	78	78	78	81	96	96	96	100	
WAA 3629 Average		94	92	92	93	93	98	98	99	100	
Project Area Average		97	95	95	96	97	98	99	99	100	

Source: Suminski and Lutz 1999; Stangl and Lutz 2003

Figure Wildlife-2 displays the location of the existing 6,404 acres of high-value deer habitat in the project area. Although high value deer habitat focuses on winter use areas, it also includes habitat used by deer during the spring and summer and consists primarily of areas of POG on south, west, and east facing slopes, on aspects below 1500 feet and where snow accumulations are low to moderate. Areas with a habitat suitability index score of 0.41 or greater were considered high-value deer habitat. This is 84 percent of that which existed before large-scale logging began in 1956 (7,595 acres). Harvest activities are only proposed to occur within WAA 3629; therefore, there will be no change in the availability of deer habitat in WAA 3309. The largest reduction of high-value deer habitat from the existing level in WAA 3629 would occur as a result of Alternatives B and D, with a 2 percent reduction in deer habitat. Alternatives F and H would reduce deer habitat by 1 percent.

The amount of harvest at the lower elevations is an important consideration for Sitka black-tailed deer and other species needing habitat cover during the winter. Table 3-10 displays the present distribution of clearcut harvest by elevation class within the project area and proposed harvest by alternative. Because partial cutting within a moderate range of cutting intensity appears to maintain plant diversity and abundance (Deal 2001, p. 2076), the 25 percent individual tree selection harvest acres were not included in this analysis. An estimated 1 to 3 percent of the POG habitat is proposed for harvest in the project area and between 1 and 3 percent is in the lower elevations (0-800 feet).

## Finger Mountain

### Existing High Value Deer Habitat





**Table 3 - 10**  
**Clearcut Timber Harvest (Excluding 25 Percent Individual Tree Selection) in POG**  
**Habitat by Elevation Class for the Project Area**

Elevation (feet)	Previously Harvested Acres	Remaining Acres POG 2003	Acres POG Proposed for Harvest			
			ALT B	ALT D	ALT F	ALT H
0-800	1691	18,382	530	899	402	205
800-1200	53	8373	314	398	169	0
1200-1500	0	4404	65	93	83	0
>1500	0	2808	3	3	3	0
<i>Total</i>	<i>1,744</i>	<i>33,967</i>	<i>912</i>	<i>1,393</i>	<i>657</i>	<i>205</i>

Source: Suminski and Lutz 1999; Stangl 2003

Cover will be reduced as a result of clearcuts in POG proposed in the action alternatives. After clearcut harvest, rapid establishment and regeneration of conifers, shrubs, and herbaceous plants is expected. This flush of vegetation will provide forage for deer. However, this understory vegetation will not likely be available during the winter due to snow accumulation. Once the stand reaches the stem exclusion stage, the stands are not likely to provide foraging habitat for deer during any season. Thinning of these stands will increase forage availability in the short-term. Of the total POG in the project area, Alternative B will harvest 3 percent within three VCUs; Alternative D will harvest 3 percent within three VCUs; Alternative F will harvest 2 percent within two VCUs; and Alternative H will harvest 1 percent within 2 VCUs (see Table 3-4 in the Biodiversity and Old-growth section of this chapter). Overall, between 97 and 99 percent of the existing POG will be maintained in the project area.

During the planning process, units proposed for harvest were selected and designed to preserve important wildlife habitats and the integrity of old-growth habitat, and to maintain POG habitat and connectivity. In addition, clearcut or even-aged management harvest units for all of the action alternatives differ from traditional clearcutting in that 10-35% percent of the timber in most units will be retained. Retained trees will most likely be in clumps or "islands" within a unit, or may be more evenly spaced. Although cover will still be removed, the actual openings created will be smaller than the unit size, and mature trees will remain as part of the unit. In addition, some alternatives propose 25 percent individual tree selection partial harvest. In these stands, canopy structure and understory vegetation will be maintained, and POG habitat will not be reduced (Deal 2001, p. 2076). Although habitat for deer has been reduced as a result of cumulative activities in the project area, results of deer pellet surveys conducted jointly by ADF&G and the Forest Service suggest that deer numbers on Chichagof Island and in the vicinity of the Finger Mountain project area have remained stable since surveys began in 1981 (Kirchoff and White 2002).

### American Marten

The American marten (referred to as marten) was chosen as an MIS because it represents species requiring old-growth habitat and it is a harvested furbearer. Marten historically occurred on the mainland of Southeast Alaska and on some islands. However, this species was transplanted to Chichagof Island between 1930 and 1950. Like deer, marten are dependent on high-quality winter habitat that includes low-elevation, high-volume POG forest especially in coastal and riparian areas. These habitats intercept snow, provide cover and denning sites, and provide habitat for prey species. Marten are generalist predators and will vary their diet seasonally. On Chichagof Island, marten were recorded to utilize winter-killed deer carcasses during the spring;

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squirrels, birds and berries during the summer; and salmon carcasses and small rodents during the fall (Ben-David and others 1997, pp. 288-289).

There are two primary activities that can affect marten and their habitat: clearcut timber harvest (especially of POG habitat) and increases in open motorized access. Clearcut harvest reduces canopy cover, the amount of coarse woody debris, and the availability of denning and resting sites and may potentially reduce habitat for prey species. An increase in road access can increase trapping pressure on marten. Marten are easily trapped and can be over-harvested, especially where trapping pressure is heavy and not effectively controlled. Where roads are connected to communities and road densities exceed 0.2 mile of road per square mile (mi/mi<sup>2</sup>), marten densities decrease due to their susceptibility to over-trapping. Marten densities may be reduced by as much as 90 percent when road densities approach 0.6 mi/mi<sup>2</sup> (Strickland and others 1982).

East Chichagof Island is classified in the 1997 Forest Plan as a high-risk biogeographic province for marten habitat (Forest Plan 1997, p. 4-118). In these areas, timber harvest units that contain high-value marten habitat (defined as stands below 1500 feet elevation in high volume POG timber strata) must meet specific standards and guidelines. Because less than 33 percent of the original POG forest has been harvested in each of the VCUs in the project area, standards and guidelines include retaining: 1) 10-20 percent of the original stand structure; 2) an average of at least four large trees (20-30 inch DBH or greater) per acre for future snag recruitment; 3) an average of at least three large decadent trees per acre; and 4) an average of at least three pieces of down material (logs 20-30 inches or greater in diameter and 10 feet long) per acre. These should be somewhat evenly distributed throughout the harvest unit (Forest Plan 1997, p. 4-119).

## Marten Habitat Modeling

An interagency model (Suring and others 1992) was developed and updated during the 1997 Forest Plan analysis to compare the effects of action alternatives on the existing condition of marten habitat to the condition of marten habitat as it existed prior to 1956 when large-scale harvests were initiated. The model calculates HSI based on timber volume strata, elevation, and typical snowfall. Low-elevation, high-volume POG stands, especially in beach fringe or riparian areas with low snowfall, provide the best marten winter habitat. HSI are used to calculate habitat capability and are expressed as theoretical numbers of marten that particular habitat types can be expected to support and to estimate changes in habitat capability that result from timber harvest. Low-impact harvest prescriptions such as individual tree selection where only 25 percent of the basal area is removed were assumed to have less of an impact on marten habitat than clearcuts because partial cutting maintains a diversity of plant communities in the understory and cover in the overstory (Deal 2001, p. 2076). All other harvest prescriptions were counted as clearcut by the model.

## Direct, Indirect, and Cumulative Effects

The marten habitat model was developed as a tool to assess the effects of action alternatives compared to past, present (No-Action Alternative), and future habitat suitability and capability within the project area. Therefore, direct, indirect, and cumulative effects of the proposed actions on marten habitat will be addressed in this section.

Table 3-11 displays the habitat capability that would remain following implementation of the action alternatives as compared to the existing habitat capability (1999 levels) and to the habitat capability assumed to be present before large-scale harvest occurred (1956 levels). Although marten did not exist in the wildlife analysis area in 1956, the existing marten habitat capability for the Finger Mountain project area is 96 percent of the probable 1956 capability (Table 3-11). The reduction in habitat capability is due to large-scale logging and road building which converted high-value marten habitat into young growth stands. Combined with previous timber harvest, the model estimates that implementation of the proposed project will result in a habitat

capability of 94 percent (Table 3-11). There would be a 2 percent reduction in habitat capability compared to the existing condition. There was no difference in project area habitat capability between action alternatives.

**Table 3 - 11**  
**Percent Marten Habitat Capability Remaining from 1956 Levels (Before Large-Scale Harvest Activities) and 1999 Levels (the Existing Level) by Alternative**

WAA	VCU	Percent Habitat Capability Remaining Since 1956					Percent Habitat Capability Remaining from Existing Condition				
		ALT A	ALT B	ALT D	ALT F	ALT H	ALT B	ALT D	ALT F	ALT H	
3309	246	100	100	100	100	100	100	100	100	100	
	247	98	98	98	98	98	100	100	100	100	
	248	100	100	100	100	100	100	100	100	100	
WAA 3309 Average		99	99	99	99	99	100	100	100	100	
3629	228	100	100	100	100	100	100	100	100	100	
	229	97	97	97	97	97	100	100	100	100	
	230	95	89	91	95	95	94	96	100	100	
	231	98	98	98	98	98	100	100	100	100	
	232	94	94	94	94	94	100	100	100	100	
	233	95	91	90	89	93	96	95	94	98	
	234	88	83	82	82	87	95	94	94	99	
WAA 3629 Average		96	94	94	94	95	98	98	98	100	
Project Area Average		98	97	97	97	98	99	99	99	100	

Source: Suminski and Lutz 1999; Stangl and Lutz 2003.

The 1997 Forest Plan requires that high-value marten habitat be maintained within the project area and within the units proposed for harvest. High-value marten habitat is defined as high volume strata in POG forest below 1500 feet in elevation. There are 6,770 acres of high-value marten habitat existing in the project area. This is 87 percent of that habitat that existed in 1956 (7,749 acres). Unit cards in Appendices B and C display the location of the existing high-value marten habitat.

The largest reduction of high-value marten habitat from the present level (1999) occurs under Alternative B (188 acres), with a 3 percent reduction in high-value marten habitat. High-value marten habitat would be reduced by 2 percent (149 acres) under Alternative D; 1 percent (79 acres) under Alternative F; and 0.2 percent (15 acres) under Alternative H. Marten standards and guidelines (Forest Plan 1997, p. 4-119) will be implemented in high-value marten habitat for all units proposed for harvest. Harvest activities will be completed by a combination of even-aged, uneven-aged, and two-aged silvicultural systems. Timber harvest would occur in the Timber Production, Scenic Viewshed, and Modified Landscape development LUDs. To meet 1997 Forest Plan standards for the Modified Landscape and Scenic Viewshed LUDs and for high-volume marten habitat (HPOG below 1500 feet elevation), 10 to 30 percent of standing trees will be retained in clumps or “islands” within a unit or they may be more evenly distributed throughout the unit. Retained trees may contribute to areas deferred from harvest activities for other resources including stream buffers, steep slopes, unsuitable soils, etc. Where trees are retained, openings in the forest canopy created by harvest will be smaller than the proposed unit size, and some mature trees will remain within the unit.

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During the planning process, units proposed for harvest in action alternatives were selected and designed to preserve important wildlife habitats and the integrity of old-growth habitat and to maintain POG habitat and connectivity. In addition, clearcut or even-aged management harvest units for all of the action alternatives differ from traditional clearcuts in that 10 to 30% percent of the timber in most units will be retained. Retained trees will most likely be in clumps or "islands" within a unit, or they may be more evenly spaced. Although cover will still be removed, the actual opening created will be smaller than the unit size, and mature trees will remain as part of the unit. In addition, some alternatives propose 25 percent individual tree selection partial harvest. Because canopy structure will be maintained, POG habitat should not be reduced and understory vegetation should be maintained (Deal 2001, p. 2076) in stands that are partially harvested.

## Effects of Roads on Marten

There are currently 17.7 miles of open existing roads in the project area at a density of 0.2 mi/mi<sup>2</sup> (Table 3-12). An estimated 2.7 miles of these roads are maintained as open to motorized use. Although VCUs 230, 233, and 234 currently exceed 0.2 mile of open road density per square mile, these road systems are not interconnected and are isolated from any community road systems. VCU 234 currently exceeds 0.6 mile per square mile. These roads are generally single-track trails that are overgrown with alder and inaccessible to cars or trucks. Although roads may be accessible to all-terrain vehicles or snow machines, these factors likely reduce trapper accessibility along these road systems.

Road construction by alternative is described in the Transportation section. Within the Finger Mountain project area, road densities will increase slightly as a result of proposed and temporary road construction proposed in Alternatives F and H and will increase by 0.1 mi/mi<sup>2</sup> as a result of actions proposed in Alternatives B and D (Table 3-12). The construction of proposed and temporary roads will increase road densities in VCUs 230, 233, and 234 for all action alternatives. Road densities will exceed 0.6 mi/mi<sup>2</sup> in VCU 233 as a result of Alternatives B and D and in VCUs 233 and 234 as a result of all action alternatives. Although road densities will be greater than 0.2 mi/mi<sup>2</sup> for the project area and 0.6 mi/mi<sup>2</sup> for some of the VCUs, the increase in motorized access would be short-term, and access to the project area is limited since it is not connected to any communities. After project completion and implementation of the Road Management Objectives (RMOs), many of the roads would be closed to motor vehicle traffic, resulting in open road densities of less than 0.1 mi/mi<sup>2</sup> post-sale in all alternatives. See the Transportation and Facilities section and road cards in Appendix C for discussion of RMOs.

**Table 3 - 12**  
**Miles (M) of Existing Open, Proposed Open, and Temporary Roads and Density (D) of Open Roads Based on Square Miles of VCUs**

VCU	Square Miles in VCU	Existing Roads		ALT B		ALT D		ALT F		ALT H	
		M	D	M	D	M	D	M	D	M	D
230	14.7	4.1	0.3	16.1	1.1	11.6	0.8	4.1	0.3	4.1	0.3
231	29.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
232	17.6	0.0	0.0	0.5	0.0	0.5	0.0	0.5	0.0	0.5	0.0
233	15.8	6.6	0.4	11.4	0.7	11.4	0.7	9.3	0.6	10.2	0.6
234	9.1	7.0	0.8	11.0	1.2	9.4	1.0	9.0	1.0	7.0	0.8
246	27.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	113.8	17.7	0.2	39.0	0.3	32.9	0.3	22.9	0.2	21.8	0.2

Source: Suminski and Lutz 1999; Costa 2001; Stangl 2003.

## Effects of Helicopter Operations on MIS

Helicopters may be used during the project to yard logs and to transport personnel and equipment. Helicopter encounters impose direct sound and sight stimuli upon wildlife in their natural setting. The encounters may occur during fly over, landing, take off and hovering of the helicopter. The primary concern is that low-level flights over animals, especially eagles and brown bears, may cause physiological and/or behavioral responses that reduce the animals' fitness or ability to survive.

The effect on wildlife depends on the species, characteristics of the aircraft activities, and a variety of other factors such as previous exposure to aircraft. Helicopter intrusions will increase the risk of displacement by wildlife. If activities are infrequent and unpredictable, displacement will be short-term. Long-term and continuous activities are likely to result in temporal and/or spatial displacement for a longer period of time. Due to the short duration of the project, long-term, cumulative effects of helicopter operations are unlikely. Although eagles vary considerably in their response to human activities, bald eagles are more susceptible to disturbances during the breeding and nesting season. Some pairs tolerate constant activity near their nest site, while others abandon their nest. The U.S. Fish and Wildlife Service recommends that repeated helicopter flights within 1/4 mile of eagle nest trees be avoided. This recommendation would be implemented in this project, so the effects of helicopter operations on eagles should be negligible.

## Effect of Logging Camps

The construction of land logging camps can reduce wildlife habitat as a result of clearing forested areas to establish camp buildings, sort yards, and associated facilities. In addition, the increase in human activities and road access can displace or alter wildlife habitat use.

All alternatives propose use of a floating logging camp. Trees and land will need to be cleared in a small area in association with the LTFs being proposed. Boat activity will increase as workers commute to the project area from floating camps.

Road construction would increase human access under all alternatives, which may result in greater hunter and trapper success for deer, bear, and marten. Road access would favor logging camp residents who may use motorized vehicles during project operations. Residents from other communities would also be able to transport vehicles to the road systems for use in accessing wildlife populations. Most impacts would occur during project implementation when road densities will increase. After project completion, many roads would be closed (see the Road Management Objectives in Appendix C), thereby reducing access and disturbance to wildlife. Road Management Objectives (RMOs) can also be changed to address problems with wildlife populations. If necessary, RMOs can be adjusted and regulatory tools implemented to reduce or eliminate problems resulting from increased access by people. Competition for wildlife resources within the project area is a concern for residents of Sitka, Tenakee Springs, and other communities. Residents of logging camps would have an advantage by living close to the resources during the life of the project. This would be a relatively short-term advantage. After closure of the camps, competition and access to wildlife resources would be reduced by RMOs and would be equal to all.

## Threatened, Endangered, Proposed, Petitioned, and Sensitive Species

As part of the National Environmental Policy Act (NEPA) decision-making process, proposed Forest Service programs or activities are to be reviewed to determine how a proposed action would affect any threatened, endangered, proposed or sensitive species. If the proposed project is a “major construction project” that requires an environmental impact statement, then a biological assessment is prepared (FSM 2670.5). A major construction project is defined as a construction project or other undertaking having similar physical impacts that is a major Federal action significantly affecting the quality of the human environment as referred to in the NEPA (50 CFR 402.02). The Biological Assessment (BA) is the means of conducting this review, documenting the findings (FSM 2672.4), and determining whether the action adversely affects species or their habitat. This section of Chapter 3 of the Finger Mountain Timber Sale(s) Final EIS constitutes the most recent biological assessment prepared for the project. The initial BA prepared for the project is contained within the project planning record.

The effects analysis in the BA is required to address direct, indirect, and cumulative effects of an action on threatened or endangered species or their critical habitat (50 CFR 402.02) and on sensitive species or their habitat (FSM 2672.42). The BA is also in compliance with Section 7 of the Endangered Species Act (ESA), which requires all Federal Agencies, in consultation with the U.S. Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS), to insure that their actions are not likely to jeopardize the continued existence of threatened, endangered, or proposed (TEP) species or adversely modify their habitat. Management policy and direction for threatened, endangered, and sensitive species are also contained in Forest Service Manual 2670 and standards and guidelines are included in Chapter 4 of the 1997 Forest Plan. This analysis includes discussions of relevant mitigation measures from the 1997 Forest Plan.

### Threatened, Endangered, or Proposed Species

A biological assessment that evaluated the effects of the proposed activities on TEP and sensitive species was completed on November 17, 1999. None of the alternatives was anticipated to adversely affect these species. Although the effects have not changed, this analysis updates the species listed as TEP and sensitive and provides additional information to the effects analysis.

In compliance with the 1997 Forest Plan and ESA, species that are listed by the FWS or NMFS as TEP for this area were identified. TEP species are plant and animal species formally listed by the FWS or NMFS under the authority of the Endangered Species Act of 1973, as amended. In addition, the State of Alaska has an Endangered Species law that authorizes the commissioner of the Alaska Department of Fish and Game (ADF&G) to list Alaska endangered species.

The FWS and the NMFS were consulted for this project. In addition, a letter requesting a list of TEP species that may occur along the shoreline of the Sitka Ranger District was sent to the FWS and NMFS in May 2001. Responses from these agencies in addition to Internet web sites developed by the FWS and NMFS to aid in consultation were referenced for this document. Occurrence and habitat information for listed TEP species was obtained from the FWS and NMFS web sites, literature, and field surveys.

In Alaska, there are four bird and one plant species listed by the FWS as threatened or endangered (Table 3-13). None of these species occur on the Tongass National Forest (pers. comm. Ed Grossman, September 20, 2002, FWS Consultation Log Number 02-26V). Table 3-13 lists threatened and endangered marine species identified by NMFS that occur in Alaska (7 October 2002). There are no species proposed for listing.

**Table 3 - 13**  
**Threatened and Endangered Species occurring in Alaska as listed by the FWS and NMFS (7 October 2002)**

Common Name	Scientific Name	ESA Status	Occurrence on the Tongass NF or in adjacent marine waters
Aleutian shield fern	<i>Plystichum aleuticum</i>	Endangered	Does not occur
Blue whale	<i>Balaenoptera musculus</i>	Endangered	Uncommon
Bowhead whale	<i>Balaena mysticetus</i>	Endangered	Uncommon
Eskimo curlew	<i>Numenius borealis</i>	Endangered	Does not occur
Fin whale	<i>Balaenoptera physalus</i>	Endangered	Uncommon
Humpback whale	<i>Megaptera novaeangliae</i>	Endangered	Common
Leatherback sea turtle	<i>Dermochelys coriacea</i>	Endangered	Uncommon
Right whale	<i>Balaena glacialis</i>	Endangered	Uncommon
Sei whale	<i>Balaenoptera borealis</i>	Endangered	Uncommon
Short-tailed albatross	<i>Phoebastria albatrus</i>	Endangered	Does not occur
Sperm whale	<i>Physeter macrocephalus</i>	Endangered	Uncommon
Snake River Sockeye Salmon	<i>Onchorhynchus nerka</i>	Endangered	Does not occur
U. Columbia River Spring Chinook Salmon	<i>Onchorhynchus tshawytscha</i>	Endangered	Does not occur
Puget Sound Chinook Salmon	<i>Onchorhynchus tshawytscha</i>	Threatened	Does not occur
L. Columbia River Chinook Salmon	<i>Onchorhynchus tshawytscha</i>	Threatened	Does not occur
U. Willamette River Chinook Salmon	<i>Onchorhynchus tshawytscha</i>	Threatened	Does not occur
Snake River Spring/Summer/Fall Chinook Salmon	<i>Onchorhynchus tshawytscha</i>	Threatened	Does not occur
Spectacled eider	<i>Somateria aleuticum</i>	Threatened	Does not occur
Steller's eider	<i>Polystichum aleuticum</i>	Threatened	Does not occur
Steller sea lion	<i>Eumetopias Jubatus</i>	Threatened	Common

### Affected Environment

TEP issues were analyzed based on the project area boundary. This analysis was completed using Value Comparison Unit (VCU) boundaries as described in the 1997 Forest Plan. Because VCUs are generally characterized as distinct geographic areas that encompass a drainage basin containing one or more large stream systems (Forest Plan 1997, p. 7-47), they provide a logical

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geographic boundary. The Finger Mountain project area includes portions of VCUs 230, 231, 232, 233, 234, and 246 for a total of 72,780 acres. Depending on the action alternative, harvest activities are proposed to occur in VCUs 230, 233, and 234 in the project area. No harvest activities are proposed to occur in VCUs 231, 232, or 246.

This analysis will address direct, indirect, and cumulative effects to TEP species. The cumulative effects analysis includes “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency...” (40 CFR 1508.25). Cumulative activities that have occurred and are likely to occur in the project area include but are not limited to: recreation uses such as outdoor recreation vehicle use, boating related activities, fishing, hunting, berry picking, and camping and timber harvest and thinning of previously harvested stands. Within the project area, an estimated 184 acres were harvested between 1920 and 1941, and approximately 1700 acres were harvested between 1956 and 1986. Activities that are proposed to occur in the project area include continued recreation use; thinning of harvested stands; road maintenance; road, timber, stream, wildlife, and other surveys; and general maintenance and monitoring activities as required by the 1997 Forest Plan.

Harvest activities that have been proposed to occur in the vicinity of Finger Mountain but outside of the project area include the Indian River, False Island, and Corner Bay Timber Sales. Broad Creek is the only timber sale that is proposed in the Tongass 10-year plan for future harvest within the Finger Mountain project area. Broad Creek lies within VCU 246, which is designated as a Roadless Area in the 2003 Tongass Land Management Plan Revision Supplemental Environmental Impact Statement (SEIS). Other timber management projects that may occur in project area include the thinning of previously harvested stands.

Three action alternatives, Alternatives B, D, and F, were proposed in the Finger Mountain DEIS (USDA 1999b), and a small sale alternative, Alternative H, was added to the range of alternatives as a result of public comments to the DEIS. The action alternatives differ primarily in harvest intensity and miles of road constructed and reconstructed. Harvest (e.g., clearcut and group selection) and yarding (e.g., helicopter and cable) systems are unit specific and may vary between alternatives. Alternatives are described in detail in Chapter 2 of the EIS.

A Biological Assessment that evaluated the effects of the proposed activities on TEP species was completed on November 17, 1999 and submitted to the NMFS for concurrence with the effects analysis. Only three species were identified to potentially occur in the project area: the humpback whale, Steller sea lion, and the American peregrine falcon. None of the alternatives was anticipated to adversely affect these species. No other threatened, endangered, or proposed species listed at that time were known to occur in the project area. Although the effects have not changed, this analysis updates the species listed as TEP and provides additional information to the effects analysis.

## Plant Species

The Aleutian shield fern occurs only in the Aleutians. This species does not occur on the Tongass NF.

## Bird Species

The Eskimo curlew is a northern Alaska species that is thought to be extinct. Habitat for this species does not occur in Southeast Alaska. There are only two breeding colonies of short-tailed albatross that remain active, and they are both in Japan (FWS Fact Sheet). The short-tailed albatross forages widely and has been observed in the Gulf of Alaska along the Aleutian Islands and in the Bering Sea. This species has not been observed in the marine waters of the Inside Passage (FWS Fact Sheet). The spectacled eider occupies coastal waters around Norton Sound, Ledyard Bay and between St. Lawrence and St. Matthew Islands. The Steller's eider occupies

coastal waters around the Alaska Peninsula, Kodiak Island, lower Cook Inlet, and Nunivak Island. Primary breeding grounds occur in Russia, western Alaska, or the arctic coastal plain of Alaska (FWS Fact Sheet). Habitat for these species does not occur on the Tongass National Forest.

The American peregrine falcon (*Falco peregrinus anatum*) was delisted in August 1999, and the Endangered Species Act requires monitoring of this species for five years following delisting. The American Peregrine falcon may migrate through the project area. This falcon is primarily associated with interior Alaska for breeding, nesting, and rearing of young. It is highly migratory, wintering as far south as northern Argentina, and it occurs in Southeast Alaska only during migration periods. Population numbers of the American peregrine falcon are continuing to increase; in Alaska, population numbers have increased three-fold since the species was originally listed. During migration, the abundance of prey species is likely to be the primary habitat factor affecting peregrine falcons; the primary prey species are thought to be shorebirds, waterfowl, and passerine species.

#### **Leatherback Sea Turtle**

The leatherback sea turtle's range extends from Cape Sable, Nova Scotia, south to Puerto Rico and the US Virgin Islands. During the summer, leatherbacks tend to be found along the east coast of the US from the Gulf of Maine south to the middle of Florida. They are commonly observed by fishermen beyond the 100-fathom curve in offshore waters of Hawaii (from NMFS website). Leatherback sea turtles are suspected to be uncommon in Alaska marine waters (Balsinger 2001).

#### **Salmon Species**

Snake River sockeye salmon occur in adjacent waters near the western boundaries of the Tongass National Forest but do not occur within the marine waters of the Inside Passage (USDA 1997, p. J-13). The Upper Columbia River spring chinook salmon, Puget Sound chinook salmon, Upper Willamette river chinook salmon, Snake River spring/summer/fall chinook salmon occur in marine waters on the outside coast to the west of the Tongass National Forest but they are not known to inhabit the coastal marine waters of the Tongass National Forest. However, because Chinook salmon are piscavores (i.e., fish eaters), they may, during some stage of their lives, feed on fish that are dependent on the waters of the Tongass.

No threatened, endangered, or candidate fish species are found in the freshwater river systems in the project area. Two threatened species, the Snake River fall chinook salmon (*Oncorhynchus tshawytscha*) and the Snake River spring/summer chinook salmon, and one endangered species, the Snake River sockeye salmon (*Oncorhynchus nerka*), have been caught in the troll fisheries off Kruzof Island. However, the presence of these Pacific Northwest salmon is not documented in the waters near the project area.

#### **Steller Sea Lion**

The Steller (northern) sea lion ranges from Hokkaido, Japan, through the Kuril Islands and Okhotsk Sea, Aleutian Islands and central Bering Sea, Gulf of Alaska, Southeast Alaska, and south to central California. The centers of abundance and distribution are the Gulf of Alaska and Aleutian Islands. Steller sea lion habitat includes marine and terrestrial areas that they use for a variety of purposes. Adult Steller sea lions congregate at rookeries for breeding and pupping. Rookeries are generally located on relatively remote islands, often in exposed areas that are not easily accessed by humans or mammalian predators. Critical habitat has been designated for this species in Southeast Alaska (50 CFR 226.202(a)). Designated haulout sites include Benjamin, Biorka, Coronation, Sunset, and Timbered Islands and Biali Rock, Cape Addington, Cape Cross, Cape Ommaney, Gran Point, and Lull Point. Designated rookery sites include Forrester Island, Hazy Island, and White Sisters Island. A Steller sea lion haulout area is located approximately 7 miles northwest of the project area on the opposite (north) shore of Tenakee Inlet.

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## Whale Species

Blue whale, bowhead whale, fin whale, right whale, sei whale, and sperm whale are generally found in pelagic marine waters. They may be found in outside coastal waters but rarely enter the marine waters of the Inside Passage.

Humpback whales are the most abundant of the seven species of endangered whales that occur in Southeast Alaska waters. They are common in the inside waters of the Alexander Archipelago (NMFS Letter 7 October 2002) and are regularly sighted in the Inside Passage and coastal waters of the Southeast Alaskan panhandle from Yakutat Bay south to Queen Charlotte Sound (NMFS 1991). Humpback whales feed in Southeast Alaskan panhandle waters from about May through December, although some have been seen every month of the year. Peak numbers of whales are usually found in near shore waters during late August and September, but substantial numbers usually remain until early winter.

The local distribution of humpbacks in Southeast Alaska appears to be correlated with the density and seasonal availability of prey, particularly herring (*Clupea harengus*) and euphausiids. Important feeding areas include Glacier Bay and adjacent portions of Icy Strait, Stephens Passage/Frederick Sound, Seymour Canal, and Sitka Sound. Glacier Bay and Icy Strait appear to be important feeding areas early in the season, when whales prey heavily on herring and other small, schooling fishes. Frederick Sound is important later in summer, when whales feed on swarming euphausiids. During autumn and early winter, humpbacks move out of the Sound to areas where herring are abundant, particularly Seymour Canal. Other areas of Southeast Alaska may also be important for humpbacks and need to be evaluated. These include: Cape Fairweather, Lynn Canal, Sumner Strait, Dixon Entrance, the west coast of Prince of Wales Island, and offshore banks such as the Fairweather Grounds.

Because humpbacks inhabit shallow coastal areas, they are increasingly exposed to human activity. Recovery plans completed by the NMFS for the humpback whale identified six known or potential categories of human impacts to these species: hunting, entrapment and entanglement in fishing gear, collisions with ships, acoustic disturbance, habitat degradation, and competition for resources with humans. National Forest management activities that could have an affect on whale habitats or populations generally fall into the categories of acoustic disturbance and habitat degradation and are generally associated with the development and use of LTFs and associated camps, the movement of log rafts from LTFs to mills, and the potential development of other docks and associated facilities for mining, recreation and other forest activities (Forest Plan 1997, p. J-14). Although critical habitat has not been designated by NMFS for these species, regulations governing the approach to humpback whales in Alaska have been implemented (50 CFR Part 224) to reduce human impacts.

## Determination of Effects

The project area was analyzed to assess the direct, indirect, and cumulative effects of the proposed project on TEP species or critical habitat. Cumulative activities were defined above. A determination of “no effect,” “not likely to adversely affect,” or “may effect” was made to assess the effects of the proposed project on TEP species (50 CFR 402.14, FSM 2671.44).

This project would have no direct, indirect, or cumulative effects on the Aleutian shield fern, Eskimo curlew, short-tailed albatross, spectacled eider, or Steller’s eider because they are not documented to occur in the project area. The 1997 Forest Plan standards and guidelines provide for the protection of seabird rookeries and waterfowl concentrations.

There would be no effect to salmon species because they are not known to inhabit the coastal marine waters adjacent to the project area. The proposed project would not have any cumulative effects to these salmon species because 1997 Forest Plan aquatic habitat protection measures were developed to reduce or eliminate the likelihood of freshwater habitat degradation and designed to provide a natural range of habitat conditions to maintain habitat for salmon species (Forest Plan 1997, p. 4-53 to 4-73).

This project would have no effect on the leatherback sea turtle or the blue, bowhead, right, fin, sei, and sperm whales because they rarely enter the marine waters of the Inside Passage. Proposed activities would not degrade the marine environment, and all activities would be conducted in a manner consistent with the Marine Mammal Protection Act, the Endangered Species Act, and National Marine Fisheries Service regulations for approaching whales, dolphins, and porpoise.

Action alternatives are not likely to adversely affect Steller sea lions or humpback whales, which commonly occur in the Inside Passage and may be present in waters adjacent to the project area. Proposed activities would not occur within Steller sea lion critical habitat as defined by 50 CFR 226.202(a). Proposed LTFs and other docking facilities would not degrade the marine environment because they are restricted to small, very localized areas of the marine environment. Permits require that remedial action be taken if monitoring determines that water quality has been impacted during construction or operation of the LTF. Log raft/barge towing routes are generally well established, and towing occurs at relatively constant speeds and directions. Adverse effects from such towing have not been documented. Although recreational boating by LTF/logging camp workers would be localized, it would not occur in established routes. Activities would be highly random and dependent on many factors including: the size of the bay, water depth, and number of boats. This activity would be in addition to recreational boating activity from the communities of Tenakee Springs, Sitka, and Angoon and would vary between seasons and years. Whatever additional boating may occur from workers connected with logging operations in the Finger Mountain project area would likely be indistinguishable from total recreational use. In Alaska, regulations governing the approach to marine mammals have been implemented (50 CFR Part 224) to reduce human impacts. All activities would be conducted in a manner consistent with the Marine Mammal Protection Act, the Endangered Species Act, and National Marine Fisheries Service regulations for approaching whales, dolphins, and porpoise.

## **Sensitive Species**

Sensitive species are those wildlife, fish and plant species identified by a Regional Forester for which population viability is a concern as evidenced by a significant current or predicted downward trend in population numbers, density, or habitat capability that would reduce a species existing distribution (FSM 2670.5). As part of the NEPA process, Forest Service activities will be reviewed, through a BA, to determine their potential effect on sensitive species, and impacts to these species will be minimized or avoided (FSM 2670.32). Viable populations and habitat of these species will be maintained and distributed throughout their geographic range on National Forest System Lands (FSM 2670.22).

Region 10 has identified four sensitive animal and three sensitive fish species that could potentially occur on the Tongass National Forest (Forest Plan 1997, pp. 4-89 to 4-93). Sensitive animal species include the Osprey (*Pandion haliaetus*), Peale's peregrine falcon (*Falco peregrinus pealei*), Trumpeter swan (*Cygnus buccinator*), and the Northern goshawk (*Accipiter gentilis laingi*). Sensitive fish species include the Island King Salmon (Admiralty Island), Fish Creek chum salmon (Fish Creek near Hyder), and northern pike (Yakutat Forelands). Habitat information for these species was obtained from literature and files, area maps, people familiar with the project area, and completed field surveys.

# 3 Environment and Effects

## Affected Environment

### **Fish Species**

None of the sensitive fish species occurs in or near the project area. The Island King Salmon only occurs on Admiralty Island. The Fish Creek chum salmon only occupies Fish Creek near the town of Hyder, Alaska. The northern pike only occurs on the Yakutat Forelands.

### **Osprey**

Osprey are specialized raptors that are not commonly observed in Southeast Alaska. Their diet consists mainly of fish; therefore, they are usually found near lakes, streams, beaver ponds, coastal beaches, or large estuaries (VanDaele 1994; Forest Plan FEIS 1997, p. 3-233). Therefore, osprey are adversely affected by stream or waterway alterations that reduce fish populations or visibility in areas traditionally used as feeding areas (VanDaele 1994). Osprey nests usually occur in broken-top spruce trees or western hemlock snags. In Southeast Alaska, nests are located within the beach fringe and averaged 0.7 mile (range 0.25 to 1.4 mi) from the nearest saltwater (Blatt 1995, p. 2-3). A total of 16 osprey-nesting areas have been documented on the Tongass National Forest: 15 in the Stikine area and 1 in the Ketchikan area. There are no osprey nests documented to occur in the project area.

### **Peale's Peregrine Falcon**

The Peale's subspecies of the peregrine falcon is not listed as endangered or threatened, but it is covered by a provision of the "similarity of appearance" which broadens the scope of protection for all peregrine falcons. Peale's peregrine falcons nest on cliffs from 65 to 900 feet in height along the outer coast of the Gulf of Alaska (Forest Plan 1997, p. 3-233). Nest distribution is closely associated with large seabird colonies located on the outer coasts or nearby islands. Schempf (1992, p. 6) found that seabird remains, including marbled murrelet, ancient murrelet and Cassin's auklet, comprised most of the prey items found at aeries in Southeast Alaska. The project area does not lie along the outer coast and Peale's peregrine falcon nests have not been documented to occur in the project area.

### **Trumpeter Swan**

Trumpeter swans breed in Alaska and winter along the Pacific Coast from the Alaska Peninsula to the mouth of the Columbia River (Bellrose 1980, p. 90). The breeding range of the trumpeter swan in Alaska is concentrated along the Alaska Gulf coast and other wetland areas in central and southern central Alaska (Bellrose 1980, p. 88), where they take advantage of open waters of saltwater estuaries and freshwater lakes and rivers. Swans also pass through southern Southeast Alaska in the spring and fall during migration to and from their breeding grounds. Swans that spend the winter here usually move to large lakes and estuaries once the weather turns cold. They arrive in the area in mid-October as they are migrating south, and their numbers increase as migration continues. Swans typically leave for their breeding area by mid-April (Bellrose 1980, p. 90). Although trumpeter swans may be present in the project area primarily during the fall and early spring migration periods and during winter, they have not been documented to occur in the project area and none was observed during field surveys.

### **Northern Goshawk**

The northern goshawk is identified as a species of concern throughout its range and is identified as a sensitive species by the Alaska Region of the USFS. In an effort to evaluate the status, population, and habitat ecology of the northern goshawk on the Tongass National Forest, Alaska Department of Fish and Game (ADF&G) and the Forest Service (FS) conducted a goshawk study from 1991 to 1999. A total of 65 nesting areas were documented in Southeast Alaska (Titus and others 2001, p. 2), and 16 nest sites occurred on the North Zone (Hoonah, Juneau, Sitka and Yakutat Ranger Districts) of the Tongass National Forest (Flatten and others 2001, p. 6).

The goshawk is a wide-ranging forest raptor that occupies old-growth forest habitat in Southeast Alaska. Of 661 radio relocations of goshawks in Southeast Alaska, over 90% were in habitat classified as volume class 4 or greater, and 68% were in habitats classified as volume class 5 or greater (Titus and others 1994, p. 4). Suitable nest site habitat is commonly 12 to 37 acres in size and consists of large trees with dense canopy and a generally open understory (Flatten and others 2001). Of 18 nest trees, 83% were located in old-growth stands, and 17% were in second growth trees greater than 90 years of age (Titus and others 1994, p. 4). Goshawk nest sites generally occur far from openings in stands more than 600 feet wide, on slopes less than 60%, and near the toe of a slope or on a bench. Nest trees average 423 feet in elevation and generally do not exceed 1000 feet (USDA 1998b, p. A-3 to A-4; Titus and others 1994, p. 5).

Foraging areas comprise the largest proportion of goshawk breeding home range. Foraging habitat is characterized by a greater diversity of age classes and structural characteristics (e.g., snags, woody debris) than nesting areas (Reynolds and others 1992, p. 16). Breeding season home range size is strongly dependent upon the quality of foraging habitat and prey availability. In Southeast Alaska, prey remains identified in goshawk breeding areas included Steller's jays (*Cyanocitta stelleri*), grouse (*Dendragapus* spp.), varied thrush (*Izoreus naevius*), red squirrel (*Tamiasciurus hudsonicus*) and woodpeckers (*Picidae*) (Titus and others 1994, p. 6). The median size adult goshawk home range during the breeding season in Southeast Alaska was 9469 acres (female) and 11,425 acres (male) (Iverson and others 1996, p. 30).

Goshawk broadcast call surveys were completed in June and July of 1996 and 1997 in potential goshawk nesting habitat following the Alaska Region Goshawk Inventory Protocol (USDA 1992b). Potential goshawk nesting habitat was defined in the Tongass National Forest Land and Resource Management Plan Implementation Policy Clarification (USDA 1998b, p. A-3) as stands with high volume strata that are below 1000 feet in elevation, on slopes of less than 60%, and in contiguous habitat outside of beach fringe and riparian buffers. In 1996, 226 points were surveyed in the project area and an additional 166 points were surveyed adjacent to the project area in the Southeast Chichagof Landscape Analysis (Shephard and others 1999) area. In 1997, 282 points were surveyed in the project area and an additional 52 points were surveyed in the Southeast Chichagof Landscape Analysis (Shephard and others 1999) area. Two goshawks were detected near Unit 1540 in the Little Seal drainage in 1997. A follow up, overlook/valley survey was conducted in and adjacent to Unit 1540 in April of 1998. One goshawk was briefly observed but no nest was located within or adjacent to this unit. A possible goshawk was detected in the Broad Creek drainage during October of 1998 (outside of the nesting seasons). No goshawk nests were located within the surveyed areas or during surveys completed by other survey crews (i.e. stand exam crew, hydrology crew). Although there are no confirmed goshawk nesting sites in the Finger Mountain project area, goshawks are extremely difficult to locate, and it is possible that the project area includes one or more breeding territories.

### Plant Species

A Biological Evaluation was completed in 1997 to assess the effects of the proposed project on 22 sensitive plant species that were listed on January 3, 1994. In 1999, this list was revised to remove *Draba borealis* var. *maxima*, *Draba kamtscharica*, *Platanthera chorisiana*, and *Ranunculus orthorhynchus* var. *alascensis* (Leonard 1999). In 2002, modifications were made to remove *Dodecatheon pulchellum* ssp. *Alaskamum* and to add *Botrychium tunux* and *Botrychium yaaxudakeit* (both moonwort ferns) to the sensitive species list (Bschor 2002). As a result of these modifications, two supplements to the BE were completed (Shephard and others 1999; Stangl 2003). These supplements are located in the project planning record. There are currently 19 plant species listed as sensitive on the Chugach and Tongass National Forests in the Alaska Region (Tables 3-14 and 3-15).

# 3 Environment and Effects

A pre-field review, which involved a review of pertinent literature, previous survey records, the Alaska National Heritage Program database, and the rare plant GIS coverage that identifies documented locations of some of the rare and sensitive plants on the Tongass National Forest, was completed to identify potential sensitive plants species and habitat that may be present in the project area. Sensitive plant surveys were conducted June 16 through July 10, 1997. Of the plants listed as sensitive at that time, the only species that was observed in the project area was *Platanthera chorisiana* or Choris bog orchid. This species was subsequently dropped from the list because it was more common than previously thought.

**Table 3 - 14**

**Description of range and habitat for plant species listed as sensitive by the Region 10 that could occur in the Finger Mountain project area on the Sitka Ranger District**

Species	Habitat and Location Description	Occurrence on the Tongass NF
<i>Arnica lessingii</i> ssp. <i>Norbergii</i> (Norberg arnica)	Occurs in alpine and subalpine meadows, arctic and alpine tundra, heath and open woods. Proposed action alternatives would not occur in subalpine meadows, arctic and alpine tundra or heath habitats.	Known
<i>Botrychium tunux</i> (Moonwort fern)	Grows in habitat ranging from open sand on dunes and upper beaches to well drained upper beach meadows with sandy substrates. This species is endemic to the Yakutat area and has been documented to occur in beach habitat on private lands northwest of Yakutat. Proposed action alternatives would not occur in beach or beach meadow habitats.	Known
<i>Botrychium yaaxudakeit</i> (Moonwort fern)	Grows in habitat ranging from open sand on dunes and upper beaches to well drained upper beach meadows with sandy substrates. This species is endemic to the Yakutat area and has been documented to occur in beach habitat on private lands northwest of Yakutat. Proposed action alternatives would not occur in beach or beach meadow habitats.	Known
<i>Carex lenticularis</i> var. <i>dolia</i> (Goose-grass Sedge)	This sedge is an alpine/subalpine plant that is emergent or lies at the edge of wet meadows and ponds. It is known to occur in the coastal mountains of Alaska. Proposed action alternatives would not occur in alpine or subalpine habitats.	Known
<i>Glyceria leptocladachya</i> (Davy Manna grass)	Grows in wet lowland habitats including swamps and stream and lake margins. Stream and lake habitat is protected by 1997 Forest Plan riparian standards and guidelines.	Known
<i>Hymenophyllum wrightii</i> (Wright Filmy Fern)	This species prefers humid shaded boulders, cliffs and damp woods and occurs at the base of trees and rock outcrops or in crevices of tree trunks. It occurs in coastal areas of Southeast Alaska and has been documented to occur on Bjorka and Mitkof Islands.	Known
<i>Isoetes truncate</i> (Truncate Quillwort)	This aquatic grows immersed in shallow water of lakes and ponds (USDA 1997) and is known to occur on Kodiak and Vancouver Islands. Lakes and ponds are protected by riparian buffers; therefore, this species would not be affected by proposed action alternatives.	Suspected
<i>Ligusticum calderi</i> (Calder lovage)	This species occurs in subalpine boggy meadows, meadows and forest edges. This plant occurs on Kodiak Island, Dall Island (just west of Prince of Wales Island), and Bokan Mountain on Prince of Wales Island (USDA Forest Service 1994).	Known
<i>Platanthera gracilis</i> (Bog Orchid)	This species grows in wet meadows. Wet meadows are generally protected by 1997 Forest Plan riparian standards and guidelines.	Known

# 3 Environment and Effects

Species	Habitat and Location Description	Occurrence on the Tongass NF
<i>Poa laxiflora</i> (Loose-flowered Bluegrass)	Occurs in upper beach meadows and open forests. Several sightings have been documented in Southeast Alaska at Sandborn Canal at Port Houghton, and Admiralty Island (USDA Forest Service 1994).	Known
<i>Puccinellia kamtschatica</i> (Kamchatka alkali grass)	This species prefers wet habitat on the coast and in upper beach meadows. It is limited to the southern coast of Alaska from the Aleutian Islands to northern Southeast Alaska.	Known
<i>Romanzoffia unalaschensis</i> (Unalaska mist-maid)	This species occurs on beach terraces or wet rock outcrops and rock crevices. It ranges from eastern Aleutians, Alaska Peninsula, and Kodiak to Southeast Alaska. Proposed harvest activities would not occur on beach terraces or rock outcrops.	Known
<i>Senecio moresbiensis</i> (Queen Charlotte Butterweed)	Occurs in montane to alpine habitats in shady wet areas and bogs on open or rocky slopes and in open, rocky heath or grass communities. Proposed action alternatives would not occur in alpine or subalpine habitats.	Known

**Table 3 - 15**  
**Description of range and habitat for plant species listed as sensitive by the Region 10 that were excluded from detailed analysis because species do not occur on the Tongass NF<sup>1</sup>**

Species	Habitat and Location Description	Occurrence on the Tongass NF
<i>Aphragmus eschscholtzianus</i> (Eschscholtz's little nightmare)	Grows in alpine habitat. Limited to wet areas of tundra and heath. Proposed action alternatives would not occur in tundra or alpine habitat.	Suspected
<i>Cirsium edule</i> (Edible Thistle)	Occurs in wet meadows and open woods. The range includes the southernmost portion of Southeast Alaska.	Known
<i>Draba kananaskis</i> (Tundra whitlow-grass)	This species is not present on the Tongass NF.	No
<i>Papaver alboroseum</i> (Pale poppy)	Found in well-drained soils and gravel usually in alpine settings. Proposed action alternatives would not occur in alpine habitats.	Suspected
<i>Puccinellia glabra</i> (Smooth alkali grass)	This species is not present on the Tongass NF.	No
<i>Stellaria ruscifolia</i> <i>ssp. aleutica</i> (Circumpolar starwort)	This plant occurs in moist gravelly sites along creeks. Its range is limited to coastal southeastern and south-central Alaska and the Aleutian islands.	Known

<sup>1</sup> Note: species range does not include the Sitka Ranger District, species that occur within habitat that is not in the project area (i.e. alpine, subalpine, rock outcrops), or species that occur in riparian, wetland, or estuary habitat protected by 1997 Forest Plan standards and guidelines.

## Determination of Effects

A determination of “no impact,” “beneficial impact,” “may impact individuals but not likely to cause a trend to federal listing or a loss of viability,” or “likely to result in a trend to federal listing or loss of viability” was made to assess the effects of the proposed project on sensitive species (USDA 1992c). Activities addressed for the cumulative effects are described above.

There would be no impact to sensitive fish species because they do not occur in or near the project area. There would be no impact to osprey or trumpeter swans as a result of the action alternatives because these species have not been documented to occur in the project area. Potential habitat for these species would be maintained by the 1997 Forest Plan riparian buffers and beach fringe standards and guidelines that require maintaining an approximate 1000-foot wide beach fringe of mostly unmodified forest to provide important habitats for wildlife (Forest Plan 1997, p. 4-4). Streams or waterways would not be altered and fish habitat would be maintained. If any of these species were detected during project operations, all applicable 1997 Forest Plan standards and guidelines would be implemented. For swan and osprey, these standards and guidelines include avoiding any disturbance, particularly during nesting, brood rearing, and wintering periods.

Research has suggested that extensive timber harvest may result in reductions in goshawk abundance. Several factors may contribute to decreased productivity and density in goshawk populations following particular changes in forest structure and composition: (1) an increase in potential predator populations (i.e., great horned owls) as hiding cover is reduced; (2) reduced thermal conditions at nest sites; (3) reduced prey abundance or availability; (4) increased competition as predators that adapt to more open forest become abundant; and (5) increased disturbance and human-caused mortality due to increased access from the timber harvest road network (Iverson and others 1996, p. 21).

The proposed project may impact individuals but is not likely to cause a trend to federal listing or a loss of viability of the goshawk. Each action alternative includes harvest of POG forested habitat that has the potential to provide nesting and/or foraging habitat for goshawks. Action alternatives propose to harvest between 205 and 1109 acres of POG habitat. Alternative B will harvest 3 percent of the total POG (171 acres within HPOG) within three VCUs in the project area and involves 902 acres of even-aged management. Alternative D will harvest 3 percent of the total POG (137 acres in HPOG) within three VCUs and involves 816 acres of even-aged management. Alternative F will harvest 2 percent POG (75 acres in HPOG) within two VCUs and involves 187 acres of even-aged management. Alternative H proposes to harvest 205 acres of POG (15 acres in HPOG) or 1 percent of the total available POG within 2 VCUs and involves 156 acres of even-aged management. Overall, between 97 percent and 99 percent of the existing POG will be maintained in the project area. Harvest activities will not occur in areas designated as non-development LUDs or OGR.

Although POG forest would be reduced as a result of action alternatives, during the project planning process, wildlife habitat was assessed and evaluated for the entire proposed unit pool within the project area. Each unit was reviewed to assess the quality of habitat for wildlife. Evaluations were based on local knowledge, interagency input, information acquired from field surveys, review of aerial photos, and review of literature, past databases (GIS), and surveys. Units proposed for harvest in action alternatives were selected and designed to preserve important wildlife habitats and the integrity of old-growth habitat and to maintain POG and connectivity. In addition, key habitats (i.e., riparian, beach, estuary, OGR) are protected by 1997 Forest Plan standards and guidelines. OGR provide foraging and nesting habitat for the goshawk and would be maintained as designated in the 1997 Forest Plan. In addition, the project area is bounded by one large OGR, one medium OGR, and a congressionally designated Wilderness Area. Reference the Biodiversity and Old-growth section of this document for additional information on the location and affects to OGR.

Any goshawk nests found during field reconnaissance or unit layout would be protected from harvest by implementing 1997 Forest Plan standards and guidelines for goshawks. These require the maintenance of an area of no less than 100 acres of POG forest (if it exists) generally centered over the nest tree or probable nest site, preferably with a multi-layered, closed canopy

# 3 Environment and Effects

and provision of foraging opportunities for young goshawks. No commercial timber harvest is permitted, and no continuous disturbance likely to result in nest abandonment is permitted within 600 feet of the nest from March 15 to August 15.

Potential direct, indirect, and cumulative impacts would be limited to individual plants that are known or suspected to occur on the Sitka Ranger District and in habitats that occur in the project area (Table 3-14). Although Field surveys were not completed to assess the presence of the two moonwort fern species added to the sensitive species list in 2002, habitat of the project area was evaluated and previous survey records and the rare plant GIS database that identifies documented locations of some of the rare and sensitive plants on the Tongass National Forest were referenced. *Botrychium tunux* and *Botrychium yaaxudakeit* range from open sand on dunes and upper beaches to well drained upper beach meadows with sandy substrates. Neither of these species has been documented to occur in the project area.

The 1997 Biological Evaluation completed a risk assessment for sensitive plants. This assessment considered two factors: 1) the consequences of adverse (or beneficial) effects on the population and 2) the likelihood or probability that these effects would occur. It was determined that the proposed timber harvest, road construction, and LTF construction would have moderate direct, indirect, and cumulative effects to sensitive plant species. This was based on the following considerations: 1) sensitive plants may occupy habitats proposed for road corridors; 2) most of the potentially-occurring sensitive plants do not occur in forested habitat proposed for harvest; 3) no sensitive plants were found in the preferred habitat surveyed in the project area; and 4) there are no known populations of sensitive plants in the project area. Therefore, the proposed project may impact individuals but is not likely to cause a trend to federal listing or loss of viability of any of the sensitive species possibly occurring in the project area. If any of these species were discovered in the project area, standards and guidelines outlined in the 1997 Forest Plan would be followed.

## Petitioned Species

On May 9, 2001, the Secretary of Interior was petitioned to list the Kittlitz's murrelet (*Brachyramphus brevirostris*) as Endangered with concurrent designation of critical habitat under the Endangered Species Act. The petition was submitted by Center for Biological Diversity (CBD), Coastal Coalition, Eyak Preservation Council, Lynn Canal Conservation, Inc., and Sitka Conservation Society. Petitioners cited dramatic reductions in population size over the last decade and declining habitat quality as reasons for the requested listing. The petition listed the following factors as potential causal agents for Kittlitz's murrelet population declines.

- marine oil pollution and other marine pollution (such as cruise ship dumping)
- global warming
- lack of recruitment (reduced breeding success)
- population declines combined with a small population size
- commercial gill-net by-catch mortality
- commercial fishing and tourist disturbance on breeding and feeding grounds
- climate regime shift
- other human disturbances (especially sound pollution)
- inadequacy of existing regulatory mechanisms
- disease or predation

The Kittlitz's murrelet is closely associated with glacial affected habitats. In Southeast Alaska, they forage on small fish, shrimp-like euphausiids, and other amphipods near tidewater glaciers or near the outflow of glacial streams. Nesting habitat includes alpine talus rock slopes (CBD and others 2001, p. 12). According to the petition, the southern boundary of Kittlitz's murrelet breeding range is LeConte Bay on the Tongass National Forest (CBD and others 2001, p. 8).

Kittlitz's murrelets breed in Port Houghton, Endicott Arm, and Tracy Arm, and the largest breeding population is believed to be in Glacier Bay National Park and Preserve, especially near the tidewater glaciers in the northern reaches of the bay. It is also possible that they breed in Taylor Bay, Lituya Bay, and Taku Inlet where there are tidewater glaciers and near the small glaciers of Baranof Island.

The proposed action would have no impact to the Kittlitz's murrelet or its habitat. This species has not been documented to occur in the project area, and proposed actions would not occur in alpine talus rock slope habitat. Many of the factors that are proposed to contribute to the decline of the Kittlitz's murrelet are directly related to the marine environment. The Forest Service has little, if any, direct management authority or jurisdiction that would relate to many of these factors as Forest Service authority begins above mean high tide, outside the marine environment. Potential foraging habitat for this species would be maintained by the 1997 Forest Plan riparian buffers and beach fringe standards and guidelines that require maintaining an approximate 1000-foot wide beach fringe of mostly unmodified forest to provide important habitats for wildlife (Forest Plan 1997, p. 4-4). Streams or waterways would not be altered, and fish habitat would be maintained. If any individuals of this species were to be detected during project operations, all applicable Forest Plan standards and guidelines would be implemented.

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## Geology

Most of the rock type of the project area consists of granite. In addition, two other rock types are mapped for the project area: marble and hornfels (general contact metamorphosed rock) (Loney and others 1975). See the Southeast Chichagof Landscape Analysis (Shephard and others 1999) for a more complete discussion of the geology of the peninsula.

Small areas of carbonate rock and possibly karst features are mapped primarily within VCU 247, which is outside of the project area. Karst is a comprehensive term that applies to the unique topography, surface, and subsurface drainage systems and landforms that develop by the action of water on soluble carbonate rock such as limestone and marble. During fieldwork, marble gravel was present in both forks of Saltery River; however, we did not find the outcrops from which it originated. This marble gravel may help contribute to the relatively high productivity of the river for fish compared to the other streams in the project area. Marble outcrops and a possible sinkhole were also found in the subalpine area on the ridge between Fog Creek and the Kadashan drainage. In both cases, it is likely that the marble outcrops were too small to be mapped separately, and so the geologist grouped them with hornfels. No carbonate rock or karst features were found in any of the proposed units.

A small hot spring occurs in the Broad Creek drainage, about 3.5 miles up the main creek from saltwater. The chemistry of Broad Creek and the hot springs were both tested in the summer of 1978. Compared to the stream as a whole, the hot spring is predictably high in calcium, sodium, sulfate, and has an alkaline pH of 8.7.

No direct, indirect, or cumulative effects to karst resources are anticipated from any of the alternatives, since no karst features were found in or near any of the units proposed for harvest. No harvest is proposed in the Broad Creek drainage (VCU 246), and thus no effects to the Broad Creek hot springs are expected from any alternative.

## Water, Soil, and Fish

This section describes the current condition of water, soil, fish, and riparian areas in the project area, and the projected direct, indirect, and cumulative effects of the proposed Finger Mountain Timber Sale(s) on these resources. Potential risks to water quality resulting from timber harvest activities are also risks to fish and fish habitat. These include increased sedimentation, changes in water temperature, and reduced summer or winter low flows in streams, which can impair salmon rearing and spawning. Risks to riparian areas caused by blowdown and blockage of fish passage from improper drainage structure installation are also potential impacts.

The following descriptions and analyses reference the Southeast Chichagof Landscape Analysis (Shephard and others 1999), which includes the Finger Mountain project area. Additional detailed analyses and references to the scientific literature are in the landscape analysis and in the planning record. A Forest-wide analysis of soils, water, fish, and other resources is contained in the Forest Plan FEIS (1997, Chapter 3). Applicable water quality, fisheries and riparian direction is contained in the 1997 Forest Plan, Chapter 4 (Forest-wide standards and guidelines), and Appendices C, D, and J. The Finger Mountain project unit and road cards (Appendices B and C in this EIS) contain additional site-specific requirements and measures to protect soil, water, and fisheries resources.

### Stream Flow

Stream flow regimes for the watersheds in the Finger Mountain project area are typical of island watersheds in Southeast Alaska. Runoff responds directly to rainfall, except for a smaller peak in late spring during snow melt. No flow records exist for any of the watersheds in the project area. Stream flow records are available for the adjacent Kadashan River (1969 to 1992) and nearby Indian River (1976 to 1981) watersheds. The watersheds in the project area with significant past timber harvest activities have proportions of timber harvest (approximately 10 percent) and roads similar to the Indian River watershed.

The eight key watersheds in the project area are divided by size and shape into large, moderate, and small watersheds. Saltery is the only large watershed (greater than 20 square miles). Inbetween and Little Seal are small, and the rest are moderately sized watersheds (see the resource report and the landscape analysis for more complete descriptions). A number of smaller, unnamed drainages with limited aquatic habitat also occur in the project area.

The larger streams are shown in Figure Water-1. More detailed information on streams is displayed on the unit and road cards.

### Peak and Low Flows

Seasonal low flows and peak flows can affect stream channel migration, channel conditions, water quality, and survival of juvenile and adult salmonids (Murphy 1985; Neave and others 1953). Rain-on-snow peak flow events have the greatest susceptibility to change as the result of timber harvest in Southeast Alaska watersheds. Areas with shallow winter snow pack and large canopy openings, such as clearcut units, are the most important source zones for rain-on-snow floods (USDA 1996). The Indian River Watershed Analysis showed no apparent difference between pre- and post-harvest winter peak and summer low flows. The analysis showed that winter rain-on-snow flood events are infrequent in the area and that major peak flows are primarily associated with September and October rainfall events.

August is a critical period for summer flows, due to warm temperatures and little or no precipitation. Alpine snow pack runoff contributions to base stream flow are small at that time, and adult salmon migration is beginning.

# 3 Environment and Effects

## Effects to Stream Flow

The 1997 Forest Plan stream buffer requirements eliminate stream-bank harvest on most streams. Only on the smallest, non-fish bearing streams (generally less than five-foot active channel width) would streamside trees not be retained (Forest Plan 1997, pp. 4-53 to 4-71).

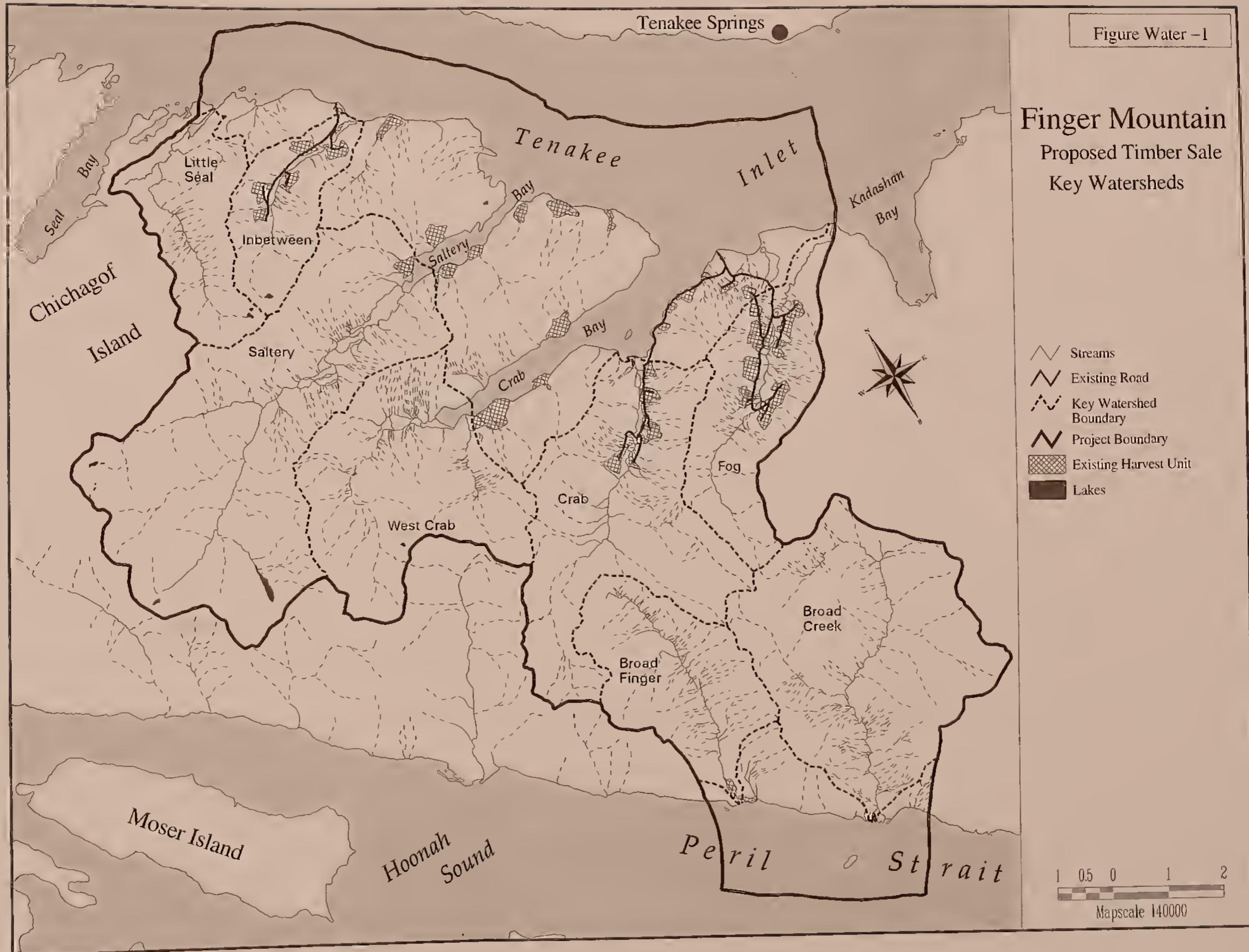
The risk of significant cumulative flow reduction is very low for all watersheds under all alternatives as a result of stringent riparian protection, low road density, and low cumulative timber harvest. Harvest in the key watersheds will be well below the 20 percent threshold of concern identified in the 1997 Forest Plan for risk of cumulative watershed effects.

No long-term peer-reviewed studies have been conducted in Southeast Alaska regarding the effects of timber harvest on water yield during low-flow periods. However, Southeast Alaska's cooler temperatures and greater summer and annual precipitation may reduce any long-term reductions in low flow as compared to Oregon and Washington, where studies have shown low flows to be a problem.

Recently, the US Geologic Survey Juneau office completed an analysis on the Staney Creek watershed on Prince of Wales Island. The analysis used the "Indicators of Hydrologic Alteration" (IHA) software developed by the Nature Conservancy, USGS surface-water data analysis programs, a comparison to a nearby undisturbed watershed with similar periods of flow record, and an examination of the precipitation regime. Time frames were the pre-harvest period (1965-1970), post harvest period (1971-1981), and forest re-growth period (1990-1998). The two flow analysis programs agreed in showing a slight decrease in minimum flows from pre-harvest to the re-growth period (11 cfs and 9.6 cfs respectively for the 10-year and 7-day low flow) in Staney Creek. However, in comparing actual flow data records of Staney Creek to a nearby, undisturbed watershed (Old Tom Creek), no difference in low flows could be determined. This suggests that the differences between pre-harvest and re-growth low flow changes in Staney Creek may be due to climatic influences. The analysis notes that the pre-harvest data was entirely within the negative Pacific Decadal Oscillation (PDO) where winter precipitation is more likely to be snow leading to prolonged spring runoff and higher spring and summer flows. In contrast, the post harvest and re-growth time periods are entirely within a positive PDO where winter precipitation is more likely to be rain and is not available to prolong spring/summer snowmelt, thus increasing the probability of low summer flows. The analysis suggests that a paired watershed study would be better suited to assess pre- versus post-harvest conditions. A major component of the overall Tongass riparian and aquatic monitoring strategy is the establishment of paired case study watersheds.

Harvest prescriptions such as individual tree selection and clearcut with reserves, which would cut from 15 to 70 percent of the timber volume, are prescribed in several areas. These prescriptions should create even less change in water yield than conventional clearcut prescriptions.

Figure Water –1





## Water Quality

Water quality is a function of several factors, including water chemistry, temperature, and the amount of sediment or dissolved solids. In the project area, good water quality is important in maintaining healthy populations of fish and other aquatic species. The Clean Water Act (Sections 208 and 319) recognizes the need for control strategies for nonpoint source pollution. The National Nonpoint Source Policy (December 12, 1984), the Forest Service Nonpoint Strategy (January 29, 1985), and the USDA Nonpoint Source Water Quality Policy (December 5, 1986) provide a protection and improvement emphasis for soil and water resources and water-related beneficial uses. Soil and water conservation practices (BMPs) were recognized as the primary control mechanisms for nonpoint source pollution on National Forest System lands. The Environmental Protection Agency supports this perspective in their guidance, "Nonpoint Source Controls and Water Quality Standards" (August 19, 1987). The Forest Service must apply BMPs that are consistent with the Alaska Forest Resources and Practices Regulations to achieve Alaska Water Quality Standards.

### Sediment

Sediment enters streams by means of surface erosion or landslides and can harm water quality. While both types of erosion are natural processes, the rate of erosion can be increased by timber harvest and road construction. This section discusses the risk to water quality from increased sedimentation and the BMPs and standards and guidelines used to prevent it.

The Southeast Chichagof Landscape Analysis (Shephard and others 1999) includes a detailed analysis of sedimentation and references to scientific literature. Chapter 3 of the 1997 Forest Plan FEIS presents a Forest-wide discussion of soils. Applicable management direction regarding soils is included in the 1997 Forest Plan (Chapter 4 and Appendix C).

### Surface erosion

A thick layer of organic material, typical of Southeast Alaska, covers most mineral soils in the project area and helps prevent surface erosion. If the organic mat is displaced and mineral soils are exposed, surface erosion can occur. This typically occurs in small areas within harvest units, on roads, and on exposed surfaces left by landslides.

Roads are the primary source of surface erosion, and can be a source of sediment delivered to streams. Erosion can occur on the roadbed, in drainage ditches, and on cut- and fill-slopes. There are few areas with surface erosion problems in the project area. Existing roads are located in valley bottoms or along foot slopes, which reduces the amount of soil exposed by cut- and fill-slopes. Road surfaces throughout the project area consist of competent rock overlay that is highly resistant to breakdown and erosion, thus reducing sediment production.

### Landslides

In the past, glacial processes had a profound effect on the topography and soils of the project area, leaving steep slopes above the valleys that are susceptible to landslides. Since the end of the last glacial period (12,000 years ago), large landslides have created depressions on the mountain slopes, and colluvial and alluvial fans have been deposited on the valley floors. This natural process is continuing, as indicated by current landslide occurrence within the area.

A landslide inventory (Shephard and others 1999) for the Southeast Chichagof Peninsula, including the Finger Mountain project area, showed that 98 slides had occurred between 1962 and 1976 in areas undisturbed by management activities. Four of these slides reached streams, which is close to the three-percent average for all of Southeast Alaska. In areas where management activities had occurred, the inventory counted nine landslides in clearcut units and two slides along roads.

# 3 Environment and Effects

The inventory findings indicated that slope and aspect are the main factors influencing slides. Over 90 percent of the landslides occurred on slopes greater than 50 percent. Over 75 percent of the slides occurred on south, southeast, and east aspects, possibly because these aspects are most exposed to large storms and, therefore, may receive more rainfall and wind, which could help to trigger slides.

## Existing Sediment Risk

The overall risk of sediment entering streams and degrading water quality is a function of the following factors:

- the amount of steep and potentially unstable ground in the watershed;
- the density of stream channels and the number of channels vulnerable to sediment deposition; and
- the amount of past disturbance in the watershed (timber harvest and road construction).

## Soil Stability

The soils in the project area are mapped and described in the Chatham Area Integrated Resource Inventory (USDA, 1986). In order to describe their relative instability, soils are grouped into different mass movement hazard categories: low, moderate, high, and extreme. The categories are based on factors that can influence slides, such as slope, landform, parent material, and drainage. As shown in Table 3-16, high hazard soils in the project area range from 36 percent (Little Seal Watershed) to as high as 44 percent (Crab Watershed).

## Sediment Deposition

In preparing the Southeast Chichagof Landscape Analysis (Shephard and others 1999), we used a prototype model developed by Geier (1996) to identify watersheds with high potential to transport sediment to sensitive fish habitat. The model is a function of the following variables: the amount of high hazard soils in a watershed, the density of stream channels that can transport sediment, and the density of channels in which sediment can be deposited. The final watershed risk index (WRI) is scaled to a unitless number between 0 and 10. The watershed with the highest rating is given a value of 10, and all others are scaled to this maximum. Table 3-16 shows the WRI scores for the key watersheds (See the Southeast Chichagof Landscape Analysis [Shephard and others 1999] for a complete discussion).

All watersheds in the project area have a low to moderate WRI when compared to all the watersheds analyzed in the Southeast Chichagof Landscape Analysis (Shephard and others 1999). These relative risk ratings, when combined with other parameters, such as fisheries values and amount of existing human impact help us determine overall watershed sensitivity. This information was used to compare the amount of planned harvest and road construction with the relative risk to each watershed in the following section.

## Past Disturbance (harvest and road construction)

Table 3-16 displays miles of existing road and percentage of acres previously harvested in the project area, by watershed. Only the Fog and Inbetween watersheds have had a substantial amount of past harvest. However, neither of these watersheds currently has or is at risk of having degraded water quality. The harvest units have revegetated and are not causing surface erosion or landslides. Most of the road systems have been closed, and in many places have become overgrown with vegetation, which further prevents erosion. In addition, the watershed risk index

is relatively low for each watershed, indicating that none of the watersheds is highly vulnerable to sediment reaching stream channels and degrading water quality (Table 3-16).

**Table 3 - 16**

**Existing Watershed Condition and Sediment Risk as Measured by Areas of High Hazard Soils and Existing Timber Harvest, Miles of Existing Roads, and Watershed Risk Index**

Watershed	Size (mi <sup>2</sup> )	Percent high & extreme hazard soils	Percent existing harvest	Miles of existing road	Watershed risk index <sup>1</sup>
Crab	13.8	44	2	6.6	7.9
Fog	8.0	37	10	6.98	6.5
Inbetween	4.6	41	8	4.1	6.7
Little Seal	5.7	36	0	0	5.5

Source: J Winn and Lutz 1999; Sitka Forest Supervisor's Office GIS CLU, Stands, and Road cover; J Costa 2001.

<sup>1</sup>From Southeast Chichagof Landscape Analysis (Shephard and others 1999) based on the model developed by Geier, 1996.

### Direct, Indirect, and Cumulative Effects of Sedimentation

The Forest Service must apply BMPs that are consistent with the Alaska Forest Resources and Practices Regulations to achieve Alaska Water Quality Standards. The site-specific application of BMPs, which include a monitoring and feedback mechanism, is the approved strategy for controlling nonpoint source pollution as defined by Alaska's Nonpoint Source Pollution Control Strategy (October 2000). In 1997, the State approved the BMPs in the Forest Service's Soil and Water Conservation Handbook (FSH Handbook 2509.22, October 1996) as consistent with the Alaska Forest Resources and Practices Regulations. This Handbook is incorporated into the 1997 Forest Plan. In addition, standards and guidelines in the 1997 Forest Plan are designed to ensure that water quality is maintained. Together, the BMPs and standards and guidelines control road construction and timber harvest activities, and help minimize the risk of accelerated erosion and sediment input to streams. Some of the practices they require include the following:

- eliminating most areas containing extreme hazard soils (most mineral soils on slopes over 72 percent and some on slopes over 60 percent) from consideration for harvest or road construction;
- deleting units or roads when field review indicates that they are located in areas that should be rated as extreme hazard soils;
- adjusting unit boundaries or road locations to avoid small areas or inclusions of extreme mass movement hazard soils; and
- eliminating the need for roads in these areas by selecting helicopter harvest systems.

Areas of high and extreme hazard soils that are left in the proposed units and road corridors are protected by BMPs and standards and guidelines, which include the following measures:

- selecting harvest prescriptions, such as individual tree selection, that leave over half of the trees in the unit to help maintain soil stability;
- selecting harvest systems, such as helicopter or full or partial suspension cable systems, which minimize ground disturbance;
- using road construction techniques, such as partial or full bench construction, which minimize the risk of creating a landslide on unstable slopes;

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- designing and installing road drainage structures that minimize sedimentation; and
- designing and sizing stream buffers that trap sediment and minimize the risk of windthrow and slope failure adjacent to the stream.

The unit and road cards, contained in Appendices B and C of this document, describe any site-specific measures to protect soil stability beyond the requirements of the BMPs and standards and guidelines, which in most cases are sufficient. The stream course protection measures are also important in protecting soil stability, since the side slopes of stream channels are often the least stable portions of a hill slope. These measures require leaving wind firm buffers along all substantial stream channels (see the description of riparian management areas in the Stream Habitat and Fish sub-section that follows).

According to the 1997 Forest Plan, slope gradients of 72 percent or more are removed from the tentatively suitable timber base due to high risk of soil mass movement. However, at the project planning level, the Forest Supervisor or the District Ranger may approve timber harvest on slopes of 72 percent or more on a case-by-case basis, based on an on-site analysis of slope stability. The 1997 Forest Plan standards and guidelines also direct that road building should be avoided on slopes greater than 67 percent, on an unstable slope, or in a slide prone area, where feasible.

Some areas mapped as extreme hazard soils or with slopes in excess of 72 percent were included in units for the following two reasons: (1) during field review, the areas were mapped incorrectly, and the slopes were actually less than 72 percent, or (2) the slopes were greater than 72 percent but are stable and do not threaten a stream. A report written by the project soil scientist documents these changes. As described in the report, approximately 43 acres of area mapped as extreme hazard remain in the unit pool. In units 1731, 1770, and 1853, small areas with slopes greater than 72% occur, for a total of no more than three acres. These units are planned for harvest in Alternative B. The remaining 40 acres occur in 3 helicopter units (1805H, 1813H, 1815H), which are planned for harvest in Alternatives F and D. In these units, we have taken a number of steps to minimize the risk of slope failure, which include deleting the steepest areas, prescribing harvest of one half the trees or fewer, and requiring full suspension (helicopter) logging.

Table 3-17 shows the acres of harvest on high hazard and extreme hazard soils for each alternative. In addition, it shows the acres harvested on high hazard soils in which more than 50 percent of the trees would be left and would help to maintain soil stability. In Units 1813H and 1815H in the Fog Creek Watershed, the harvest prescription is to individually select and remove 40 percent of the trees. These prescriptions were specifically designed to protect soils in these steep harvest units. In other units, these partial harvest prescriptions were designed to meet other objectives as well as to protect soil stability. Alternative F has a moderately higher proportion of proposed harvest on high and extreme hazard soils than the other alternatives. However, as shown in Table 3-17, most of the harvest in this alternative would protect soils by removing fewer than half of the trees.

**Table 3 - 17**  
**Acres of Harvest by Alternative**

ALT	Total planned harvest	Acres of Proposed Harvest		Acres of Harvest Past and Proposed	
		< 50% removal on high & extreme hazard soils	> 50% removal on high & extreme hazard soils	Total harvest	Total on high & extreme hazard soils
B	936	0	367	2,822	625
D	1,036	100	262	2,922	620
F	827	233	139	2,714	630
H	223	0	139	2119	397

Source: J Winn and Silbaugh 1999; Sitka Forest Supervisor's Office GIS CLU and Road covers; Abt 2003.

Table 3-18 shows the total miles of proposed road construction planned on high hazard soils by alternative. However, as discovered during field review, all of the roads are planned on slopes less than 67 percent. Both new classified and temporary roads would be built. As described in the transportation section of this chapter, new classified roads are constructed using specific standards, while temporary roads have fewer construction standards, are less expensive, and are intended for temporary access to harvest units off of main-line classified roads. In both cases all BMPs and standards and guidelines must be met. The road management objectives in the transportation section would require that all proposed temporary roads and much of the classified road would be closed after timber harvest was completed. However, 14 miles of classified road would remain open in Alternative B, 5.4 miles in Alternative D, 10.1 miles in Alternative F and 3.5 miles in Alternative H. Alternative H would have the least long-term risk of sediment impacts due to fewer miles of open road. Open roads require maintenance of drainage structures to decrease the likelihood of damage from large flood events and consequently protect water quality.

**Table 3 - 18**  
**Miles of Proposed Road by Alternative**

ALT	Proposed Classified Road		Proposed Temporary Road		Total Road Miles of existing and planned road
	Total miles <sup>1</sup>	Miles on high hazard soils <sup>1</sup>	Total miles	Miles on high hazard soils	
A	0	0	0	0	17.6
B	9.8	2.9	10.9	3.9	34.5
D	6.7	1.8	8.0	2.3	27.7
F	0	0	4.3	2.0	13.8
H	0.6	0	3.0	2.4	9.5

Source: J Winn and Lutz 1999; Sitka Forest Supervisor's Office GIS CLU and Road covers; J Costa 2001; Abt 2003.

<sup>1</sup>These totals include areas mapped as Mass Movement Index (MMI) 3 (slopes 51-72%) and MMI 4 (slopes >72%). However, during field review, these areas were all found to be MMI 3.

Alternative B proposes the most miles of road construction and second most acres of harvest in each watershed. However, even in this alternative, all watersheds would be unlikely to have significant cumulative impacts. The density of roads, both existing and proposed, would not exceed one mile of road per square mile for any watershed. In a study in the nearby Indian River Watershed, Paustian and others (1987) measured sediment levels before and after road construction that had resulted in a similar road density and were unable to detect higher sediment levels.

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As shown in Table 3-16, the Crab Watershed has the highest watershed risk index in the project area (7.9). However, when compared to the rest of southeast Chichagof Island, this only rated as moderately high, as described in the Southeast Chichagof Landscape Analysis (Shephard and others 1999). In addition, this watershed does not have significant cumulative roading or harvest impacts in any alternative. The total percent harvest in the watershed would be 4.7 percent or less.

With proper application of the BMPs and standards and guidelines, none of the proposed alternatives would lead to significant direct, indirect, or cumulative impacts. A study of sediment yield at nearby Indian River in an area with similar levels of harvest and roading found that timber harvest activities had no measurable effects on turbidity or fine sediment concentrations (Paustian 1987). The study further states that possible exceptions to this general observation include localized, short-term sedimentation caused by construction of road drainage structures, minor road washouts, and some small-scale mass wasting events. This study was conducted when BMPs and standards and guidelines were less stringent. Currently, our more rigorous standards further reduce the possibility that the project would measurably degrade water quality. Forest Service BMPs equal or exceed the water quality protection measures required under the State Forest Practices Act.

## Water Chemistry

Chemical water quality in the project area is similar to that of water in pristine condition, based on an analysis completed for nearby watersheds in the Southeast Chichagof Landscape Analysis (Shephard and others 1999, Chapter 4). No changes in chemical water quality from samples taken before and after timber harvest were evident in nearby Indian River (USDA 1996). There are no indications of historic or future sources of chemical contamination. Atmospheric sources of chemical pollutants are not a major factor influencing water quality in the region. With the incorporation of 1997 Forest Plan standards and guidelines and BMPs to protect stream and riparian areas, it is unlikely that minor soil disturbance from logging activities would result in measurable changes in dissolved water quality constituents.

Additional road construction could change surface and shallow ground water drainage patterns in fen wetlands and potentially result in depressed pH values in some palustrine channels. However, additional road construction in fens would be minor, and is not expected to have any major impact in any of the alternatives.

## Temperature

Removal of riparian canopy cover can have a short-term beneficial effect on juvenile salmon; increased sunlight can increase water temperatures, which can increase juvenile production and growth rates (Murphy and others 1986). However, subsequent alder and second-growth conifer regeneration can have detrimental effects in small rearing channels by increasing canopy closure. This can diminish sunlight, create colder stream temperatures, decrease food supply and reduce juvenile growth rates.

Stream temperature data from nearby Kadashan River and Indian River indicate that State of Alaska stream temperature standards are currently being met in the project area (Shephard and others 1999, Chapter 4).

Because Riparian Management Areas (RMAs) have been incorporated into the Finger Mountain project design, there would be less than 1 percent additional riparian area harvest in all alternatives. No stream temperature changes are anticipated from any alternative. Streams adjacent to proposed harvest units would have a riparian buffer, and temperature effects would be negligible (see the Riparian Management section below for further information).

## Stream Habitat and Fish

The abundant streams of coastal Southeast Alaska provide spawning and rearing habitat for many aquatic life forms, including salmon and resident fish. These aquatic resources are important to sport, commercial, and subsistence users of the area.

### Stream Habitat Condition

Field surveys were completed in the project area in 1993, 1994, and 1997 to determine the location, size, and relative condition of streams. Information from the field surveys and the Southeast Chichagof Landscape Analysis (Shephard and others 1999) indicates that most streams in the analysis area are in a near pristine condition. Although past harvest activities have affected some key riparian areas and wetlands in some watersheds, the overall abundance of healthy riparian and floodplain areas, pools, and large debris in streams indicate healthy and productive streams. The results of the landscape analysis and additional field reconnaissance were used in the design of harvest units and roads and to devise additional mitigation measures. Areas where high risk was indicated were avoided. The same standards and guidelines would be applied to any additional streams found during project layout.

### Fish Species and Uses

Project area streams contain important anadromous and resident fish habitats. The streams support four species of anadromous salmon (pink, chum, sockeye, and coho), as well as resident coastal cutthroat trout, rainbow/steelhead trout, Dolly Varden char, and sculpin. King salmon are present in the inlets and bays of the project area, but do not spawn in project area streams. These fish species are important to the subsistence, sport, and commercial fisheries of the region and are a major food source for many wildlife species.

### Management Indicator Species

FSM 2621.3 requires that the effects of a proposed action to Management Indicator Species (MIS) be assessed and that 1997 Forest Plan requirements, goals, and objectives for these species are met at the project level (FSM 2621.4). MIS are species of vertebrates and invertebrates whose response to land management activities can be used to predict the likely response of other species with similar habitat requirements. Applicable direction is included in the 1997 Forest Plan ROD and FEIS (Chapters 3 [Land Use Designations] and 4 [Forest-wide Standards and Guidelines] and Appendix K). This analysis tiers to the analyses contained in the 1997 Forest Plan FEIS, Chapter 3.

### Affected Environment

The 1997 Forest Plan identified pink salmon, coho salmon, Dolly Varden char, and cutthroat trout as fish management indicator species (Forest Plan FEIS 1997, p. 3-52). All four fish species occur in the Finger Mountain project area. Pink salmon were selected to represent anadromous fish, which are limited in their freshwater life-period by spawning gravel quality and quantity, and coho salmon were selected to represent anadromous fish that are generally limited in their freshwater life-period by stream and lake rearing area. Dolly Varden char were selected because of their distribution in freshwater habitats, and cutthroat trout were chosen because of their dependency on small freshwater stream systems, which are most susceptible to effects from management activities.

The MIS species and their habitat are described and assessed here and throughout the “Water, Soil, and Fish” section of Chapter 3. These species are dependent on the lower gradient

# 3 Environment and Effects

freshwater streams and their associated riparian and wetland areas. This key aquatic habitat is protected by 1997 Forest Plan standards and guidelines that would apply to all alternatives. These protective measures are discussed in the following paragraphs. An ongoing Forest-wide monitoring study is looking at the effectiveness of 1997 Forest Plan riparian standards and guidelines in protecting and maintaining Class II habitat for Dolly Varden char and cutthroat trout. Class II streams provide resident fish habitat. An additional study is planned to look at the effectiveness of 1997 Forest Plan standards and guidelines in protecting and maintaining Class I habitat for coho salmon. Class I streams provide anadromous or adfluvial fish habitat.

## Stream Classes, Habitat Distribution, and Use

Fish habitat can be described by watershed, stream class, and process group (stream channel typing). The Southeast Chichagof Landscape Analysis (Shephard and others 1999) describes the quantity of aquatic habitat and estimated salmon production for each watershed. Additional field reconnaissance and GIS updates have improved the accuracy of some of the information from the landscape analysis for the project area.

There are approximately 395 miles of Class I, II, and III streams in the project area (Table 3-19). Of these, 89 miles are classified as Class I (streams providing anadromous or adfluvial fish habitat), 96 miles are Class II (streams providing resident fish habitat), and 211 miles are Class III (streams containing no fish, but have water quality influence on downstream aquatic habitats). Process groups are discussed in the 1997 Forest Plan.

**Table 3 - 19**  
**Stream Miles by Stream Class**

VCU	Class I	Class II	Class III
Little Seal (230)	7.1	3.5	10.7
Inbetween (230)	4.0	4.9	13.0
Saltery (231)	25.7	18.2	48.0
West Crab (232)	10.9	17.0	37.3
Crab (233)	14.3	18.2	32.0
Fog (234)	8.8	7.6	17.2
Broad (246)	8.6	17.9	30.1
Broad Finger (246)	9.2	8.6	22.8
Total	88.6	95.9	211.1

Source: Killinger and Lutz 1999; Sitka Forest Supervisor's Office GIS streams and CLU data layers.

Note: Stream miles reported within each watershed may include smaller adjacent drainages.

All eight larger watersheds in the project area provide habitat for substantial numbers of fish. Most of the lower gradient main channels and tributaries of the Saltery, Crab, West Crab, Fog, Little Seal and Inbetween Watersheds are considered high quality salmon habitat areas. Broad Creek and Broad Finger Creek in the project area have waterfalls on their main channels, which substantially reduce the habitat accessible to anadromous fish. The lower, accessible channels of the Broad and Broad Finger Watersheds provide high quality salmon habitat. Resident cutthroat populations exist above the main channel barrier falls in Broad Creek and Broad Finger Creek. The few lakes in the Saltery and Little Seal Watersheds are above 700 feet in elevation and are not known to support fish.

## Riparian Management Areas

Riparian areas are areas adjacent to streams, lakes and ponds that are either influenced by groundwater from the water body or are sites where ground disturbing activities can have a direct influence on water quality. Riparian area delineations can equate to stream buffers for a particular stream, but typically, stream buffers would be larger than the riparian area.

In the project area, Forest Service soils, hydrology, and fisheries specialists identified and delineated riparian and other sensitive areas to insure their proper consideration and protection. Specific riparian area protection measures and application of BMPs are documented on the road and unit cards and in the soil and fisheries resource reconnaissance reports contained in the project planning record.

Specific riparian standards and guidelines designed to maintain stream integrity are detailed in the 1997 Forest Plan (pp. 4-53 to 4-73) and are specific to stream process groups. Stream process groups are groups of streams that share similar formative processes and stream channel characteristics. Process groups reflect the long-term interaction of geology, landform, climate, and riparian vegetation. Stream process groups are described in detail in the Southeast Chichagof Landscape Analysis (Shephard and others 1999), Chapter 4, p. 6-10, and in Appendix D of the 1997 Forest Plan.

The underlying strategy for protection is to strictly limit timber harvest and road construction in riparian and wetland areas. The 1997 Forest Plan standards and guidelines for riparian areas generally exclude timber harvest from the riparian areas along all Class I, II, and III streams (all fish streams and non-fish streams with immediate influence on fish streams). Class IV streams (mainly ephemeral or intermittent channels) may be considered for timber harvest. Proposed harvest activities for the Finger Mountain project are located predominantly at higher elevations away from fisheries resources and most commonly only near high gradient contained Class III and IV streams.

## Wind

Blowdown is a natural process in the project area; it can affect single trees or many acres. Windthrow along stream riparian areas is a primary source for in stream large woody debris (LWD), which maintains and creates fish habitat. However, management activities such as clearcuts and roads next to stream riparian areas can greatly increase the rate of blowdown along a stream and negatively impact future stream habitat condition. Some wind disturbances associated with past timber harvest are present in all harvested watersheds (see the Silviculture and Timber Management section of this Chapter and the Southeast Chichagof Landscape Analysis).

The 1997 Forest Plan standards and guidelines require that stream buffers be designed with a reasonable assurance of being windfirm. The potential for windthrow of trees left within harvest units and riparian areas is addressed in the vegetation and fish/hydrology section on the unit cards (Appendix B). Some stream riparian areas lie within high wind disturbance probability areas (see the Southeast Chichagof Landscape Analysis and the Silviculture and Timber Management section of this chapter). Silvicultural prescriptions for these units emphasize leaving additional windfirm trees beyond the stream buffers to reduce windthrow within the buffers. Some trees left along streams and adjacent to buffers would incur windthrow, because it is impossible to completely eliminate the risk of windthrow.

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## Past Timber Harvest

Timber harvest and roads are typically the forest management activities with the highest potential to adversely affect fisheries habitat and resources. Logging and associated road building can affect fisheries resources by changing the delivery of water, sediment, and input of large woody debris into the stream system. Prior to the Tongass Timber Reform Act of 1990 and the 1997 Forest Plan, timber was harvested up to the edge of stream banks along Class I, II, and III channels in the Tongass National Forest. The 1997 Forest Plan no longer allows such activity and also prohibits timber harvest in active portions of floodplains and alluvial fan areas.

Within the project area, 346 acres (5 percent) of stream riparian area have been harvested out of the estimated total 7,624 riparian acres (Table 3-20). This includes harvest for roads. Fog Creek (11 percent) and Inbetween (8 percent) have had the greatest proportion of riparian harvest. Harvest has occurred along 21 miles of the 395 miles of Class I, II, and III streams (5 percent), including about 10 miles of Class I streams and 4.5 miles of Class II streams.

**Table 3 - 20**  
**Stream Riparian Area Influenced by Existing Roads and Harvest Units**

VCU	Total Riparian Area Acres	Road Acres in Riparian Area	Harvest Unit Acres in Riparian Area	Total Managed Acres <sup>1</sup>	% Total Riparian Area Influenced
Little Seal (230)	423	0	0	0	0%
Inbetween (230)	406	3	30	33	8%
Saltery (231)	1,895	0	97	97	5%
West Crab (232)	1,195	0	68	68	6%
Crab (233)	1,276	15	46	61	5%
Fog (234)	618	8	62	70	11%
Broad (246)	1,053	0	0	0	0%
Broad Finger (246)	758	0	17	17	2%
Total	7,624	26	320	346	5%

Source: Killinger and Lutz 1999

<sup>1</sup>Road acres + harvest unit acres

Note: Riparian acres reported within each watershed may include smaller adjacent drainages. Riparian areas are those as defined in the 1997 Forest Plan and are based on channel types.

## Fish Habitat Mitigation

Protective measures for fisheries resources in the Finger Mountain project area are based on the Riparian Management Area strategy described above.

The National Forest Management Act implementing regulations prohibit any activities near streams that would seriously and adversely affect fish habitat (36 CFR 219.27 (e)). In addition, the Tongass Timber Reform Act of 1990 requires a no-harvest buffer zone of at least 100 feet on each side of all Class I streams and all Class II streams that flow directly into Class I streams (section 103 (a)). The 1997 Forest Plan Riparian standards and guidelines incorporate this direction and provide additional protections. Riparian standards and guidelines require no-harvest buffers along all Class I, II and III streams based on stream process groups and a defined Riparian Management Area. Standards also provide guidelines for management beyond the no-

harvest zone to provide for a reasonable assurance of windfirmness. Finally, the BMPs designed to ensure compliance with the Clean Water Act help protect riparian habitat on streams or portions of streams not protected by buffer zones.

The 1997 Forest Plan standards and guidelines, BMPs, and project designed mitigation included in road and unit cards have been used to avoid or minimize adverse effects to the project area fisheries resource. Measurable direct, indirect, or cumulative effects to fisheries resources are not anticipated.

Timber harvest may remove riparian vegetation up to the stream bank along Class IV streams included in harvest units. These are all non-fish-bearing streams, and water flows are typically intermittent or ephemeral. While these streams have insufficient flow or sediment transport capabilities to have an immediate influence on downstream water quality and fish habitat, they inevitably do introduce some sediment to streams. BMPs are applied to these streams, and they may also receive additional protection in the form of full log suspension during yarding over the stream, directional felling, or split yarding, based on the physical characteristics of the stream and the need to protect stream bank integrity.

### **Timber Harvest and Cumulative Effects**

An analysis of cumulative effects must include past, present, and “reasonably foreseeable future actions” (40 CFR 1508.7). For the action alternatives, individual sale offerings are likely to occur over the next five years, and harvest activities may extend beyond that time. The Oly Creek drainage is adjacent to the project area and will be considered for future timber planning. This area borders Broad Creek, which is the only timber sale that is proposed on the Tongass 10-year plan for future harvest within the Finger Mountain project area. However, Broad Creek lies within VCU 246 and is designated as Roadless Area. Other timber management projects that may occur in project area include the thinning of previously harvested stands.

Outside of the project area, the Indian River, False Island and Corner Bay timber sales are proposed for future harvest. These proposed sales were discussed earlier in this chapter. Activities that have occurred and are likely to occur in the project area are primarily recreation and timber harvest activities. Cumulative activities that have and are likely to occur in the project area include, but are not limited to, outdoor recreation vehicle use; boating; commercial, sport, and subsistence fishing; hunting; berry picking; camping; timber harvest; and thinning of previously harvested stands. Within the project area, an estimated 184 acres were harvested between 1920 and 1941, and approximately 1700 acres were harvested from 1956 to 1986. This includes 346 acres (5 percent) of the stream riparian area (Table 3-20). Following current 1997 Forest Plan standards and guidelines, there would be no additional harvest of riparian areas along Class I, II, or III streams under any of the alternatives.

In all alternatives, the majority of stream buffers would be along the higher gradient, Class III streams. The higher proposed harvest levels would represent harvest (adjacent to the riparian buffers) along about 10 percent of the total length of Class III streams (in addition to the existing streamside harvest on 3 percent of these streams) in the project area. This would leave trees standing below the slope-break on streams within V-notches and could leave an edge susceptible to windthrow, consequently leading to sediment concerns. To minimize this potential problem, stream channels of concern were identified and documented in field reconnaissance reports (contained in the project planning record) and unit cards, and recommendations for providing a windfirm boundary along high gradient Class III streams were made.

To reduce the chance of windthrow, a variety of silvicultural prescriptions are being used for stands adjacent to V-notches to better achieve windfirmness of the remaining trees. These include selection tree harvest within some units and adjacent to stream buffers in other units with

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high risk of windthrow. Where selection harvest is proposed adjacent to a stream buffer, the intent is to slow the wind speed prior to it reaching the buffer. This is accomplished by feathering the buffer from one edge to the other, with more large trees harvested on the edge furthest from the buffer and fewer removed closest to the buffer. The remaining trees left uncut within selection harvest units would reduce the likelihood of windthrow within the riparian areas. Windthrow is still likely within some riparian areas, but given the size and feathering of riparian buffers and partial cutting within many units, quantifiable effects on fish habitat are not expected in any of the alternatives.

To further address cumulative effects, potential harvest in the Finger Mountain project area over the next five decades can be projected. Activities that are proposed to occur in the project area include continued recreation use; fishing; thinning of harvested stands; road maintenance; road, timber, stream, wildlife and other surveys; and general maintenance and monitoring activities as required by the 1997 Forest Plan.

This projection assumes that the remaining available, suitable POG will be harvested and that the area's second-growth stands will approach harvestable age (63 to 93 years old). There are currently 4,604 acres of POG available and feasible for harvest scheduling (excluding deferred acres within VCUs 232 and 246) (see the Silviculture and Timber Management section of this chapter). Assuming all available acres are harvested by the end of the next five decades (by about 2050), the POG forest in the planning area will be reduced to 82 percent of that which existed in 1956 (Table 3-7). However, this does not take into account acres of timber management and other development LUDs that are currently designated as Inventoried Roadless Areas. In addition, the OGR system of the 1997 Forest Plan (discussed under the Biodiversity and Old-growth section of this chapter) will remain in place.

Following current 1997 Forest Plan standards and guidelines, over the next five decades there would be no additional harvest of riparian areas along Class I, II or III streams. As discussed above, the majority of stream buffers would be along the higher gradient Class III streams. Timber harvest would remove riparian vegetation up to the stream bank along some Class IV streams included in harvest units. These are non-fish-bearing streams, and water flows are typically intermittent or ephemeral. While these streams have insufficient flow or sediment transport capabilities to have an immediate influence on downstream water quality and fish habitat, they inevitably do introduce some sediment to streams. BMPs would be applied to these streams, and they would receive additional protection as needed based on the physical characteristics of the stream and the need to protect stream bank integrity. Windthrow is still likely within some riparian areas, but given the size and feathering of riparian buffers and partial cutting within many units with identified windfirm concerns, quantifiable effects on fish habitat are not expected.

## Roads and Fish Habitat

Existing roads generally avoid core wetlands, riparian areas, and major sediment source areas where possible (see the Water Quality sub-section of the Water, Soil, and Fish section of this chapter). Most roads are located in valley bottoms and lower valley side slopes, thereby limiting sources of sediment from road cut slopes and embankments. Road construction and use often pose the greatest potential risk to riparian resources and fish habitat capabilities. Road construction, under all action alternatives, requires crossing streams to access timber harvest units. Road construction has the potential to affect upstream fish passage through improper placement or sizing of culverts. Roads also can affect fish habitat through the introduction of fine sediment, consolidation and redirection of flows by road drainage structures, increased landslide potential due to road location and design, and re-routing of sediment-laden water.

The existing roads in the project area have been decommissioned in all watersheds except at Inbetween (VCU 230). Decommissioning includes pulling out drainage structures (bridges and culverts) and allowing the roadbed to grow over with alder. Surveys of the Inbetween road systems were completed in the summer of 2001. Road drainage remains in place on the Inbetween Creek mainline roads. Any work completed in this watershed would include removal or repair of structures or road segments identified as resource concerns.

The Tongass National Forest is working to complete detailed surveys of all Forest roads within the next 3 years. This is all part of a national emphasis to identify and either restore or close out roads with existing resource concerns and impacts. In the past three years, the Sitka Ranger District has surveyed most of the district roads, including the roads associated with the False Island, Corner Bay and Indian River (Tenakee) systems. During this time, work has also been completed on these road systems to close out unused roads (i.e., remove drainage structures, install waterbars, and generally stabilize the land) and to restore fish passage at failed or previously improperly installed drainage pipes on open roads. Road survey information is being used to prioritize and schedule necessary road maintenance and closure work. In compliance with Section 33, CFR 323.3(b), Clean Water Act (1987), a supplemental Memorandum of Understanding with the Alaska Department of Fish and Game requires that “the design, construction and maintenance of the road crossing shall not disrupt the migration or other movement of those species of aquatic life inhabiting the water body.” Additionally, the working draft of the “Interim Standards and Guidelines for Fish Passage Culvert Installations” will be implemented.

The number of Class I and II fish stream crossings and sensitive stream crossings (see definition below) in each alternative are a measure of potential effects on aquatic resources. Table 3-21 displays existing and new major stream crossings by alternative. Quantifiable effects on fish resources from road construction and use are not expected with application of BMPs, in any of the alternatives. However, increased stream crossings and riparian construction increase the risk of unforeseen events that can have an effect on stream habitat.

**Table 3 - 21**  
**Stream Crossings by Stream Class and Alternative**

Stream Class	Existing Crossings		Proposed (Additional) Stream Crossings		
	ALT A	ALT B	ALT D	ALT F	ALT H
Class I	2	35	26	21	13
Class II	5	48	36	28	17
Class III	1	78	53	18	12
Total	8	161	115	67	42
Sensitive Crossings <sup>1</sup>	2	52	38	17	14

Source: Killinger and Lutz 1999; Abt 2003; Sitka Supervisor's Office GIS CLU, streams, and road data layers.

<sup>1</sup>Sensitive crossings are a subset of Class I, II and III crossings. Sensitive crossings are those at Alluvial Fan (AF1 & AF2) and High Gradient Contained (HC3 & HC6) channels. These channel types present a management concern due to dynamic channel shifting or heavy bedload movement. Due to these factors, the crossing structure type (bridge or culvert), location of the structure, and planned maintenance level are crucial on these streams.

Note: Existing crossings include only crossing sites with drainage structures still in place. These are all at Inbetween Creek.

Note: Temporary road crossings are included in these figures.

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## Roads and Cumulative Effects

An analysis of cumulative effects must include past, present, and “reasonably foreseeable future actions” (40 CFR 1508.7). Activities that have occurred and are likely to occur in the project area were listed previously and include primarily recreation and timber harvest activities. In Table 3-21, the numbers of stream crossings are used to display a comparison of potential impacts to water quality, aquatic habitat and fish. The table shows that Alternative H, with the lowest number of crossings, has a lower risk among action alternatives of cumulative impacts to fish habitat associated with road crossings.

Total riparian acres associated with existing and new roads range from 25.5 acres for the existing condition to 40.8 acres for the proposed action. This represents less than 1 percent of the project area stream riparian acres and is less than 2 percent in any single watershed.

All structures (bridges, stringer bridges, culverts) crossing Class I and II fish habitat in the Finger Mountain Timber Sale(s) project will be designed to provide fish passage for juvenile and adult salmonids in accordance with the Alaska Region fish passage standards developed in cooperation with ADF&G.

Additionally, a component of the project will include reconstructing 13.4 miles of existing road, including the road in the Inbetween and Crab watersheds, that still have stream crossing structures in place. This work will include placing new structures on fish streams where needed to insure fish passage as directed in the most current design guidelines. These planned restoration actions should eliminate some current risk to fish in the project area.

Under all of the alternatives, additional roaded acres (from new proposed roads) within riparian areas would be less than 1 percent of the total riparian acres within any single watershed. Changes in riparian functions (large woody debris input, temperature moderation, nutrient input, and bank stabilization) due to new road corridors from any of the alternatives would be negligible on a watershed scale. Alternative H has a lower risk of cumulative impacts to fish habitat associated with sensitive stream crossings than other action alternatives.

Following 1997 Forest Plan standards and guidelines, over the next five decades there would be additional road construction in association with timber harvest activities in the project area. All structures (bridges, stringer bridges, culverts) crossing Class I and II fish habitat would be designed to provide fish passage for juvenile and adult salmonids in accordance with the Alaska Region fish passage standards developed in cooperation with ADF&G. Following current road management guidelines, most new roads constructed in this remote project area would be closed out with drainage structures removed after harvest activities. Therefore, we do not anticipate an increase in the overall miles of functional road with stream crossing structures in place over the next five decades. For these reasons, quantifiable effects on fish resources from road construction and use are not expected with application of BMPs. However, increased stream crossings and riparian construction increase the risk of unforeseen events that can have an effect on stream habitat.

## Essential Fish Habitat Assessment

According to the agreement between the National Marine Fisheries Service and the Forest Service dated August 25, 2000 an Essential Fish Habitat (EFH) assessment will include 1) a description of the proposed action; 2) an analysis of individual and cumulative effects of the action on EFH, the managed species, and associated species such as major prey species, including affected life histories; 3) the Forest Service’s views regarding effects on EFH; and 4) a discussion of proposed mitigation, if applicable. The agreement states that the Forest Service will prepare the EFH assessment in the DEIS. Essential Fish Habitat (EFH) was not addressed in

the DEIS as the resource sections were written prior to this being a required section in the NEPA document. For this reason, the EFH assessment has been added in the FEIS. The Magnuson-Stevens Fishery Conservation and Management Act of 1996 and the Department of Commerce's Essential Fish Habitat (EFH) consultation regulations include a mandate that Federal agencies must consult with the Secretary of Commerce on all activities, or proposed activities, that may adversely affect EFH. The National Marine Fisheries Service (NMFS) is the primary agency to be consulted for concurrence and conservation recommendations. NMFS was contacted in January 2000 to discuss EFH in reference to the Finger Mountain project. NMFS concurred with our plan to document the EFH assessment and findings in the decision notice. Final consultation with NMFS has been completed. Additional edits have been made to the section on LTFs to better describe the marine environment.

The EFH for this project includes all segments of the streams and the lakes where salmon reside during any period of the year. This essentially includes all Class I stream and lake habitat within the project area. The No-Action Alternative map for the FEIS displays the identified Class I fish streams in the planning area. EFH will also be shown on the Selected Alternative Map with the ROD for the Finger Mountain Timber Sale(s) Final EIS.

We have determined this project "may adversely affect EFH" and plan to continue the consultation process with the National Marine Fisheries Service. An adverse effect is any impact that reduces quality and/or quantity of EFH. Adverse effects may include direct impacts (e.g., contamination or physical disruption), indirect impacts (e.g., loss of prey or reduction in species' fecundity), site-specific impacts, or habitat-wide impacts, including the individual or cumulative consequences of actions.

The proposed action is a timber sale and associated road construction on southeast Chichagof Island near Tenakee Inlet. The proposed action is to plan for the sale and harvest of approximately 21 million board feet (MMBF) of timber from 936 acres of National Forest land. This would require about 21 miles of new road construction and 13 miles of road reconstruction. One temporary drive-down ramp LTF would be constructed on an approved site at Inbetween Creek (VCU 230), and one reconstructed barge facility would be used near the mouth of Crab Bay (VCU 233). Several alternatives to the proposed action are described in Chapter 2 of this FEIS.

For this timber sale, the managed fish species are coho, pink, and chum salmon. Adults of these species spawn in the lower reaches of watersheds in which timber harvest and road construction are planned in the upper reaches. Salmon eggs incubate in these streams and juvenile coho rear in the streams downstream from the planned timber sale activity. Juvenile coho feed predominantly on aquatic and terrestrial insects. Other fish species and fish at other life stages generally do not feed in freshwater.

Degraded water quality and altered physical stream habitats are potential effects of the project on EFH. Degraded water quality may include increased water temperature or suspended sediment. Potential changes in physical habitat may include reduced pool volume due to filling from sedimentation and changes in the composition of the substrate. Pool volume is important to the rearing and over-wintering of juvenile coho. Increases in fine sediment in the substrate can reduce survival of salmon eggs and change the assemblages of aquatic insects used by fish for food. Individual and cumulative effects on water quality and fish habitat are fully described elsewhere in this Chapter.

The Forest Service anticipates no detectable effects on the managed fish species due to implementation of the timber sale. We will implement the standards and guidelines for protection of fish habitat from the 1997 Forest Plan and the applicable BMPs. Standards and

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guidelines and the BMPs have been developed through interagency negotiation and are believed to provide “state-of-the art” protection of fish habitat.

It is acknowledged that standards and guidelines and BMPs occasionally are not fully implemented and are not fully effective. This means there is always some risk to EFH. We believe the risk is minimal with this timber sale as most of the proposed harvest units are upstream and away from salmon streams. Those few units near salmon streams have buffers along them that meet or exceed 1997 Forest Plan standards and guidelines for maintaining water quality and fish habitat. All structures (bridges, stringer bridges, culverts) crossing Class I and II fish habitat in the Finger Mountain Timber Sale(s) project will be designed to provide fish passage for juvenile and adult salmonids in accordance with the Alaska Region fish passage standards developed in cooperation with ADF&G.

Additionally, a component of the project will include reconstructing 13.4 miles of existing road, including the road in the Inbetween and Crab watersheds, that still have stream crossing structures in place. This work will include placing new structures on fish streams where needed to insure fish passage as directed in the most current design guidelines. These planned restoration actions should eliminate some current risk to EFH in the project area. Mitigation measures are not proposed or necessary.

Under all of the alternatives, additional roaded acres (from new proposed roads) within riparian areas would be less than 1 percent of the total riparian acres within any single watershed. Changes in riparian functions (large woody debris input, temperature moderation, nutrient input, and bank stabilization) due to new road corridors from any of the alternatives would be negligible on a watershed scale. Alternative F has a lower risk of cumulative impacts to fish habitat associated with sensitive stream crossings.

## Mitigation

Water-related (including riparian areas and wetlands) resource protection prescriptions and applicable BMPs are listed on unit and road cards (Appendices B and C), and in the fisheries and soil resource reconnaissance reports (contained in the project planning record). The 1997 Forest Plan standards and guidelines for beach and estuary fringe, riparian areas, soil and water, and wetlands apply. The Region 10 Soil and Water Conservation Handbook includes all BMPs applicable in Alaska and provides additional direction for project implementation.

Closing roads after harvest minimizes future maintenance needs and potential long-term impacts to water quality and fisheries. Only 13 of the 34.1 miles of road in Alternative B, 4.6 of the 27.3 miles of road in Alternative D, 7.3 of the 13.4 miles of road in Alternative F, and 4.0 of the 5.6 miles of road in Alternative H would remain open after harvest.

## Monitoring

Tongass National Forest BMP monitoring protocol requires annual field monitoring of all units and roads associated with timber harvest. This, along with additional implementation and effectiveness monitoring completed by the Forest would determine the effectiveness of the 1997 Forest Plan standards and guidelines and BMPs in protecting and maintaining stream riparian areas and aquatic habitat.

## Fish Enhancement

The barrier falls and upstream aquatic habitat at Broad Creek and Broad Finger Creek were evaluated for potential fishpass construction. At this time, neither stream system is considered viable for fishpass construction. Fog Creek and South Crab Creek have isolated areas mostly along tributary Class I streams where riparian restoration work, including thinning, could be further assessed. Nearly all the larger watersheds have areas suitable for borrow pond construction, which could be connected to Class I tributary channels to increase salmon rearing habitat.

### Recreation and Subsistence Fisheries

Executive Order 12962 (Recreational Fisheries, June 7, 1995) directs Federal agencies to conserve, restore, and enhance aquatic systems to provide for increased recreational fishing opportunities nationwide. Section 1 of the Order directs Federal agencies to evaluate effects on aquatic ecosystems and recreational fisheries, develop and encourage partnerships, promote restoration, provide access, and promote awareness of opportunities of recreational fishery resources.

Subsistence use of fish species within the Finger Mountain project area is relatively low compared to nearby lake and stream systems, such as Sitkoh Lake, Kook Lake, and the Kadashan River. However, subsistence use does occur in the salmon producing streams in the project area, including the lower portions of Inbetween Creek, Saltery River, West and South Crab Creeks, and Fog Creek. Valuable sport fishing opportunities are found both in and adjacent to the project area. Although the majority of the sport fishing occurs in saltwater, freshwater fishing also occurs.

The majority of the freshwater sport fishing occurs in the lower portions of the larger fish producing streams that drain into Tenakee Inlet. These include primarily Saltery River, West Crab Creek, South Crab Creek, and Fog Creek. These stream fisheries must be accessed by boat. The target sport and subsistence fishing species are primarily coho, pink and chum salmon; steelhead; coastal cutthroat trout; and Dolly Varden char. Streams within the area also contribute to the commercial fisheries of Southeast Alaska. The Saltery stream system has the highest estimated combined escapement (fish moving from salt to fresh water) of pink, chum, and coho salmon within the southeast Chichagof Island area. All of the other larger stream systems in the project area are also important sources of pink salmon and minor amounts of chum and coho salmon for the commercial fishery. Additional information on fish escapement numbers and fishing values associated with streams in the project area is described in the Southeast Chichagof Landscape Analysis (Shephard and others 1999) (Chapter 4).

Under all alternatives except A, road access would be improved in one or more of the project area drainages. Most recreational fishing is expected to remain in saltwater, however, so the impact of improved access on recreational fishing opportunities is expected to be minor.

### Recreational Fisheries Economics

Sport fishers who fish in Southeast Alaska purchase goods and services from a variety of businesses. Associated revenues generated from sportfishing include local sales tax, state fishing licenses, and corporate income taxes. Beyond purely economic considerations, fishing in the inlets, bays, and streams of the project area is important to the quality of life of many Southeast Alaska residents and non-residents.

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## Wetlands

The high amount of precipitation, cool temperatures, and terrain of Southeast Alaska have combined to form extensive wetland complexes of muskegs, estuaries, and forested wetlands. Wetlands are lands where soils are wet often and long enough that vegetation is able to grow and survive on wet soils prevails. Functions provided by wetlands include flood flow moderation, groundwater recharge and discharge, wildlife and fish habitat, and water quality protection. The 1997 Forest Plan Final EIS (pp. 3-320 and 3-321) provides detailed descriptions of different types of wetlands and their functions.

The U.S. Army Corps of Engineers (COE) Wetlands Delineation Manual (1987) provides standards for determining a site's wetland status that are based on soil, vegetation, and hydrologic criteria. The Chatham Area Integrated Resource Inventory provides a classification and map for soil and vegetation types. The map and associated attributes are stored in the Common Land Unit cover in the GIS database at the Sitka Office of the Forest Supervisor. This information was used to identify wetlands and approximate their location in the project area; a description of how the database was queried is included in the planning record. However, this process does not meet the rigor for wetland delineation described in the COE Wetland Delineation Manual. Instead it serves as an approximate delineation to help with planning. All or most of the roads in the Finger Mountain project area are exempt from site-specific COE wetland permitting. If the COE determines that some of the proposed road segments require 404 permits, more detailed wetland delineation and functional evaluations will be completed for the permitting process prior to final road design and construction.

Approximately 53 percent of the Finger Mountain project area is wetlands and includes the types listed below (according to the GIS common land unit [CLU] cover). Table 3-22 shows the acres of each wetland type in the project area.

- **Muskeg (MUS).** This type consists of bogs and fens (typically referred to as muskegs), which are dominated by sphagnum moss and sedges along with a wide variety of other plants that are adapted to very wet, organic soil. They typically contain stunted lodgepole pine and other conifers.
- **Alpine/Subalpine Muskeg (ALP).** This type consists of a combination of muskeg, heath, and sedge meadows on peat accumulations. Stunted lodgepole pine and mountain hemlock are common.
- **Forested Wetlands (FOR).** This type includes a number of forested plant communities with hemlock, cedar, or mixed conifer overstories. In the understory the presence of skunk cabbage typically indicates that the soils are often saturated with water.
- **Estuarine Wetlands (EST).** Estuaries are environments where fresh and salt water mix. They are dominated by grasses and sedges and are extremely productive. They provide critical habitat for fish and wildlife.
- **Muskeg/Forested Wetland Mosaic (MFM).** In this type, small patches of muskegs and forested wetlands, as described above, are arranged in a mosaic pattern on the landscape.
- **Forested Wetland/Upland Mosaic (FUM).** In this type, small patches of forested wetlands, as described above, and forested non-wetland vegetation are arranged in a mosaic pattern on the landscape.

**Table 3 - 22**  
**Amount of Wetland by Type in the Project Area, and Amount of Existing Road and Harvest in Each Type**

Wetland Type	Acres	Percent of Project Area	Percent Harvested	Miles of Road
MUS	3,564	4	<1.0	2.2
ALP	9,884	11	0.0	0.0
FOR	7,558	8	1.5	3.8
EST	2,400	3	0.0	0.1
MFM	7,718	8	<1.0	0.3
FUM	17,660	19	2.1	4.4
<b>Total</b>	<b>48,784</b>	<b>53</b>		<b>10.8</b>

Source: Winn 1999; Abt 2003.

The forested wetland/upland mosaic is the largest vegetation type in the project area containing wetlands. However, it is mixed with upland forest in a mosaic too complex to map separately. The wetland component of this type ranges from approximately 25 to 75 percent. The muskeg/forested wetland mosaic, forested wetland, and alpine/subalpine wetland types all occupy significant portions of the project area. However, the alpine/subalpine wetland type occurs at higher elevations than any proposed timber harvest or road construction.

## Direct, Indirect, and Cumulative Effects on Wetlands

Proposed timber harvest would occur on several different wetland types. However, the vast majority would occur on either the forested wetland (FOR) or the forested wetland/upland mosaic (FUM). In the FUM type, only 25 to 75 percent of the area is wetland; the rest is upland. Therefore, the actual area of harvest would be less than the amount listed in Table 3-23.

**Table 3 - 23**  
**Proposed and Total (Proposed Plus Existing) Area of Harvest by Wetland Type for Each Alternative**

Wetland Type	ALT B		ALT D		ALT F		ALT H	
	Proposed Harvest (acres)	Total Harvest (acres)						
MUS	0	4	3	7	3	7	3	7
ALP	4	4	5	5	6	6	0	0
FOR	139	250	253	364	161	272	44	155
EST	0	0	0	0	0	0	0	0
MFM	4	26	16	38	0	22	0	22
FUM	238	615	343	720	314	691	31	508
<b>Total</b>	<b>385</b>	<b>899</b>	<b>620</b>	<b>1,134</b>	<b>484</b>	<b>998</b>	<b>78</b>	<b>692</b>

Source: Winn 1999; Abt 2003.

As shown in Table 3-24, proposed road in wetlands is highest in Alternative B and only slightly less in Alternative D. However, there are substantially fewer miles of proposed roads under Alternatives F and H, 3.3 and 3.1 miles, respectively. In all alternatives, the majority of proposed construction is on the forested (FOR) and forested upland mix (FUM) wetland types. In the FUM type, only 25 to 75 percent of the area is wetland; the rest is upland. Therefore, the actual amount of road construction would be less than the amount listed in Table 3-24.

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Forest Service personnel, including engineers and other specialists, planned all proposed road locations to economically access timber harvest units, while addressing a number of resource issues, including slope stability, stream crossings, and wetlands. The proposed roads avoid unique or high value wetlands such as estuaries. However, they cannot avoid all wetlands.

**Table 3 - 24**  
**Proposed and Total (Proposed Plus Existing) Miles of Road by Wetland Type for Each Alternative**

Wetland Type	ALT B		ALT D		ALT F		ALT H	
	Proposed Road	Total Road						
MUS	0.0	2.2	0.0	2.2	0.0	2.2	0	2.2
ALP	1.0	1.0	0.0	0.0	0.0	0.0	0	0
FOR	5.2	9.0	6.5	10.3	1.1	4.9	0.4	3.4
EST	0.0	0.0	0.0	0.0	0.0	0.0	0	0
MFM	1.8	2.1	0.4	0.7	0.0	0.3	0	0.3
FUM	5.6	10.0	5.3	9.7	2.2	6.6	2.7	7.1
Total	13.6	24.3	12.2	22.9	3.3	14.0	3.1	13

Source: Winn 1999; Abt 2003.

All roads would be constructed to meet BMPs required by both state and federal law and 1997 Forest Plan standards and guidelines. These practices include building roads on permeable rock sub-grades to maintain subsurface flow and placement of drainage structures to maintain the natural flow of stream channels.

By applying BMPs, impacts of road construction should be limited to the wetland directly underlying the road and adjacent cuts and fills. Water flow, circulation patterns, and chemical and biological characteristics of the water within wetlands would be maintained, and adverse effects to fisheries habitat would be minimized.

No alternative would lead to a significant percentage of any wetland type being harvested or roaded. The highest impacts to any wetland type would occur on the forested wetland (FOR) in Alternative D. However, even in this alternative, road density on this wetland type would be less than one mile per square mile, and cumulative harvest would be less than five percent.

The 1997 Forest Plan requires that we monitor wetlands. Currently, Tongass National Forest staff is developing a wetland monitoring strategy. The Finger Mountain project area would be part of this strategy. Monitoring for this resource generally is also covered by monitoring of standards and guidelines for soil and water, which includes monitoring of BMPs in accordance with the 1992 Memorandum of Agreement between the Alaska Department of Environmental Conservation and the USDA-Forest Service Alaska Region. Wetland monitoring results will be provided to the COE for review.

## Silviculture and Timber Management

The following discussions and analyses are based on the Silviculture and Timber Resource and Effects Report for the Finger Mountain project area. Additional background on forest land classification, silvicultural and logging systems, and other related topics may be found in the 1997 Forest Plan FEIS: Chapter 3 (Timber) and Appendix G. Applicable direction is contained in the 1997 Forest Plan: Chapter 2, Chapter 3 (Timber Production and Modified Landscape land use designations), Chapter 4 (Forest-wide Standards and Guidelines), and Appendix A.

### Forest Types

The natural vegetation of the Finger Mountain project area is a mosaic of coniferous forest interspersed with alpine meadows, shrub riparian areas, peatlands (muskegs), and estuaries. Forested lands are classified into plant associations that describe the potential natural vegetation of a site. This vegetation results from the interactions between landform, climate, and soils. Understanding these plant associations can help us predict how vegetation will respond to disturbance. Each plant association has been grouped into a main plant series based on its potential dominant tree species. The area contains four forested plant series that are commonly found throughout Chichagof Island: western hemlock, mountain hemlock, Sitka spruce, and the mixed conifer series. The western hemlock series is most abundant throughout the VCUs proposed for harvest, occupying approximately 56 percent of the forested area.

The 1997 Forest Plan assigned four land use designations (LUDs) to lands within the project area: Timber Production, Modified Landscape, Scenic Viewshed, and Old-growth Habitat areas. Each LUD incorporates goals, objectives, and desired future conditions specific to those lands (see Chapter 1 for more detail). Forest management, including timber harvest, is designed to bring these lands closer to their desired future conditions.

### Desired Future Condition

Stands of trees that are healthy and in a balanced mix of age classes, from very young to harvestable age, are key parts of the desired future condition for lands within the Timber Production land use designation in the 1997 Forest Plan (p. 3-144). In addition, a variety of wildlife habitats, predominantly in the early and middle successional stages will be present. Approximately 98 percent of the acres suitable and available for harvest (85 percent of the total project area) are designated Timber Production in the project area.

Within the Modified Landscape designation, the desired condition includes a variety of successional stages, with less evidence of harvest in foreground areas viewed by forest visitors. The Modified Landscape designation occurs along the shoreline of Tenakee Inlet.

The Old-growth Habitat areas will attain old-growth forest characteristics, including a diversity of old-growth habitat types (Forest Plan 1997, p. 3-76). For more detailed information on the old-growth habitat strategy, refer to the Biodiversity and Old-growth section in this chapter.

### Forest Structure

Forest stand structure is the physical and temporal distribution of plants in a stand (Helms 1998). Forest structure develops and changes over time, and is important in defining wildlife and plant habitats. The Finger Mountain project area consists of a continuous variety in forest structure that provides different habitats for wildlife species. Stand structure is dynamic and is shaped by natural and human induced disturbance processes. The most prevalent disturbance agents in the Finger Mountain project area have been wind and timber harvest. Landslides, disease, and insects also have important effects on structure within the project area. Refer to the Silviculture and Timber Resource Report for this project and the Southeast Chichagof Landscape Analysis (Shephard and others 1999) for more information on disturbance.

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Stand structure is greatly influenced by the distribution of tree sizes, which is in turn related to the distribution of tree ages. Trees that regenerate following a single disturbance event are referred to as a cohort. Areas that completely regenerate following only one major disturbance result in single-cohort stands, referred to as even-aged stands. In contrast, stands develop multi-cohort structures (many canopy layers) where there are many (usually smaller) disturbance events that do not remove all of the trees from the site. Stands containing two cohorts that are each respectively even-aged are called two-aged stands. Uneven-aged stands (multi-cohort) are comprised of large numbers of seedlings, saplings and pole timber with fewer larger diameter trees present. These size and age class distributions are largely dependent on the intensity and frequency of disturbance that occurs on the site.

Silvicultural prescriptions establish the guidelines to achieve a desired structural outcome for a stand. Past clearcut harvests within the project area were designed primarily for timber production purposes. The clearcut prescription usually maximized the quantity of timber harvested and was intended to improve subsequent timber quantity and quality for sawlog products. These clearcut areas typically resulted in even-aged stands. (Refer to the Past Harvest subsection.)

## Proposed Silvicultural Treatments

For the Finger Mountain proposed timber sale(s), a variety of harvest prescriptions are designed to result in a variety of residual stand structures. Each stand prescription is categorized into a silvicultural system (described below) based on the resulting stand structure. Each resulting stand structure will help to meet different stand objectives. A mixture of resulting stand structures across the landscape is desirable for meeting landscape objectives that include maintaining diversity and wildlife habitat. For specific stand prescriptions, refer to the unit cards in Appendix B.

### Even-aged Management

Even-aged stands are stands of primarily one age class (referred to also as single-cohort stands) developed after a single stand replacing disturbance event. One result of even-aged management is the creation of stands with trees of one age class. Even-aged management proposed in this project area includes the clearcut and clearcut with reserves prescriptions with harvest levels that range from 60 to 100 percent of existing stands with the remainder being in buffers.

The objective of these prescriptions is to create highly productive, healthy stands for timber management while, in some cases, maintaining structural diversity that benefits many wildlife species by retaining some residual large diameter trees and smaller advanced regeneration. Specific large-diameter trees (greater than 20 inch dbh), in addition to intact forest canopy, will be retained in many areas that have potential high-value marten habitat. Intact forest will be retained in buffers surrounding all Class I, II, and III streams to protect water quality and stream channel function (see the Water, Soil, and Fish section). In addition, retention trees will be left in areas surrounding riparian buffers that appear to have a higher risk of windthrow. The objective is to reduce wind speed by the time the wind reaches the buffer to prevent blowdown of trees within the buffers. These prescriptions will meet the standards and guidelines for marten retention and stream protection as described in the 1997 Forest Plan. Many of these stands are constrained by feasible logging systems, are infected with dwarf mistletoe, or are rotting. Retaining such stands could reduce future timber productivity by spreading infection and forcing regenerated trees to compete for resources. Several of these units are also highly susceptible to windthrow of residual trees.

The resulting structure is representative of existing stands that receive major wind disturbance. The trees retained in these stands would be left in islands or clumps rather than dispersed throughout the unit. This would facilitate the retention of stream buffers and allow marten reserves in downhill cable operations where dispersing trees is not feasible. Some residual standing trees would be maintained under this prescription, which is more characteristic of naturally occurring, highly disturbed even-aged stands.

## Two-aged Management

Stands that have two cohorts, or age classes, are referred to as two-aged stands. This structure results naturally from stands completely regenerating after two distinct disturbance events. Two-aged management is a treatment system intended to result in a stand with trees of two distinct age classes. Clearcut with reserves is the two-aged management prescription proposed for this project.

The objectives of this prescription are the same as discussed for even-aged management. The definition used here to differentiate two-aged stands from even-aged stands is determined by the distribution of the remaining trees. The opening(s) created in a stand tend to be no larger than several tree heights, creating a more closed microsite condition for subsequent regeneration. This usually implies that a large portion of the trees may be left and distributed across the stand. The range of harvest in this category is typically between 35 to 70 percent removal.

The resulting stand structure from this harvest prescription would approximate stands that receive moderate wind disturbances and leave behind much of the residual stand structure. In addition to retaining high levels of vertical diversity in the canopy, the residual trees can help retain openings on the forest floor in which understory vegetation may persist. This understory vegetation provides forage and hiding opportunities for wildlife. The resulting structure from two-aged management is similar to a common, naturally occurring structure in the wind-exposed parts of the landscape.

## Uneven-aged Management

Uneven-aged stands develop from small, frequent disturbance events that result in stands with trees of three or more distinct age-classes (multi-cohort). These stands are typically comprised of trees of a variety of ages and sizes, with few very large trees and many small trees. They exhibit multiple canopy layers and are typically more diverse than even-aged or two-aged stands.

The uneven-aged management prescription used in this project is individual tree selection. The objective is to maintain and manage an uneven-aged stand structure by harvesting individual trees of different age and size-classes distributed throughout the stand, while encouraging regeneration and stand growth. This usually involves more intensive management than most even-aged, or two-aged techniques. Anticipated re-entry into the stands for additional timber harvest is expected in approximately 40 to 60 years. There is no final rotation age as in even-aged systems, but instead regular periodic entry designed to maintain three or more different age classes and a range of diameter classes dispersed across the stand. The prescriptions proposed in the Finger Mountain Timber Sale(s) include 25, 40, and 50 percent removal. The percentage refers to the amount removed from the stand at the initial harvest entry. No harvest would occur in areas surrounding Class I, II, and III streams so that the riparian function of these channels would be protected in accordance with the 1997 Forest Plan.

The primary objectives of these prescriptions include the following: to reduce or eliminate the scenic impact of timber harvest from important saltwater areas; to leave a large amount of intact, diverse structure for important wildlife old-growth habitat (primarily for Sitka black-tailed deer and marten); and to maintain soil stability on steep ground. Refer to the Scenery; Management

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Indicator Species and Endemic Terrestrial Mammals; and Water, Soil, and Fish sections of this chapter for more discussion.

The resulting structure in these stands is designed to be similar to low or moderately wind-disturbed stands. These stands tend to have small but frequent disturbances that do not radically change the overall stand structure from uneven-aged. Table 3-25 displays the acres prescribed in each silvicultural system by alternative.

**Table 3 - 25**  
**Silvicultural Systems by Alternative**

Silvicultural System	ALT B	ALT D	ALT F	ALT H
Uneven-aged Acres	0	154	573	0
Uneven-aged MBF	0	1,425	3,409	0
Two-aged Acres	125	178	171	82
Two-aged MBF	3,033	3,325	2,859	1,061
Even-aged Acres	902	816	187	168
Even-aged MBF	18,375	15,066	4,614	3,084

Source: Winn 1999; Abt 2003

Note: The total acres here are higher than those proposed in Table 3-29 because these include all acres within the unit boundary that contribute to the overall silviculture prescription for that unit. This includes areas unavailable for harvest such as stream riparian buffers.

## Age-class Distribution

To attain a balanced mix of age-classes as described in the 1997 Forest Plan desired condition for Timber Production areas, the 4,604 acres of remaining available old-growth sawtimber land could be evenly harvested through time. The estimated time period is based on the expected rotation age for sawlog production (100 years) beginning from the year of initial large-scale timber harvest in the area (1956). This would assume that all remaining available acres in the project area would be harvested in approximately the next 50 years, at which time the earliest harvested areas would be mature and ready for harvest again.

Assuming the remaining mature stands within the feasible, suitable, and available acreage are evenly scheduled for harvest over the next 50 years, an average of 92 acres could be harvested each year. However, it is not usually realistic to harvest in a project area each year due to planning and timber sale time frames; timber harvest economics; and concerns for other resources. Therefore, an estimated harvest interval can be used to better fit planning and operational scheduling. Table 3-26 displays four different harvest intervals and the number of acres of suitable and available timber lands that could be harvested during an interval and still contribute to a balance of age classes, assuming subsequent harvest at similar intervals.

**Table 3 - 26**  
**Acres of Harvest by Harvest Interval**

Harvest or Entry Interval (Years)	Acres Harvested Per Entry Interval
5	460
10	921
15	1,381
20	1,842

Source: Winn 1999.

Note: This data assumes that 4,604 acres would be harvested over the next 50 years.

This would be the maximum possible harvest under the 1997 Forest Plan. In reality, not all of the acres available for harvest are in the Timber Production land use designation. Some are within the Modified Landscape land use designation, which is more restrictive for timber harvest. In addition, the area harvested could be smaller, depending on the harvest prescriptions used.

### Past Harvest

The earliest records of clearcut harvest show entry into the area between 1925 and 1930 along the beach at Peril Strait in the Broad Creek watershed (VCU 246). Large-scale clearcut harvest was initiated in 1958 and continued until 1965, primarily along the beach in and between Saltery and Crab Bays (VCUs 231 and 232). Much of this harvest focused on large alluvial fans composed of Sitka spruce. More clearcut harvest occurred between 1977 and 1979 in the South Crab (VCU 233) and Fog Creek (VCU 234) drainages and along the shoreline between them. The last harvest of this scale occurred in the Inbetween drainage (VCU 230) in 1986. Typically all trees were felled in these areas, resulting in development of even-aged structure. Table 3-27 lists the acres of past harvest by decade.

**Table 3 - 27**  
**Acres of Past Harvest by Decade**

VCU	Prior to 1950	1950 to 1959	1960 to 1969	1970 to 1979	1980 to 1989	Total
230	0	0	48	0	248	296
231	0	72	253	0	0	325
232	0	268	0	0	0	268
233	0	0	0	287	0	287
234	0	0	0	526	0	526
246	42	0	0	0	0	42
Total	42	340	301	813	248	1,744

Source: Winn 1999.

### Post-Harvest Treatments

Most harvested stands regenerate naturally with the species that existed on the site before harvest. In some stands where Alaska cedar or Sitka spruce failed to regenerate to their original levels, planting was performed to ensure the successful establishment of these species so that they could reach the level that existed prior to harvest. Planting was completed on 105 acres in VCU 230. All stands within the project area have been successfully regenerated.

Many past harvest areas that would contribute to the goals, objectives, and desired future condition of the land use designation in which they occur are available for treatment. Precommercial tree thinning and other treatments that manipulate the vegetation can be of benefit, not only to timber production but also to wildlife, fisheries, and scenic quality. For these reasons, thinning should be considered for these lands.

Precommercial thinning tends to open up stands with closed canopies so that more light may reach the forest floor, thereby allowing understory vegetation to persist longer. Thinning can speed up stand development so that later seral stages are reached more quickly, diversity is introduced to stand structure, and a desired species mix in the regenerated stand is encouraged. Increased diameter growth results in stands with merchantable timber in less time than if left unthinned. Precommercial thinning is a way of changing the structure in young growth to meet objectives for wildlife habitat, riparian function, and timber production.

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No commercial thinning has occurred within the project area. Most of the stands are still too young to benefit from thinning. Also, most previously harvested stands tend to be in the beach buffer and OGR areas that are no longer managed for timber production. These stands can be considered for thinning to improve wildlife old-growth habitat. Stands in the Fog Creek (234) and South Crab (233) drainages will be evaluated to determine whether they are of suitable size and character to benefit from thinning.

## Timber

Timber harvest is one of the dominant uses designated in the 1997 Forest Plan for the project area. The timber resource is renewable and sustainable over long periods of time. It is important to know the amount of timber available to understand what can be proposed for harvest at each sale entry and maintain future timber harvest options while also sustaining healthy forest ecosystems that provide for other resources.

### Timber Potential

Forested land is categorized into productive and non-productive forest land for purposes of managing timber. The Forest Service defines productive forest land as capable of producing 20 cubic feet per acre per year. Land that is not capable of this growth (non-productive) is also considered unsuitable and is not available for timber production.

The potential for harvesting timber in the project area is determined first through a process of eliminating areas for various resource and legislative reasons. For a detailed description of the land base stratification to available suitable timber land, refer to the 1997 Forest Plan, Appendix A. This area is then field reviewed for logging feasibility and other potential resource concerns to determine the actual acreage feasible for harvest. Table 3-28 shows the acres of productive forest, acres suitable and available for timber harvest, acres feasible for harvest, and acres proposed for harvest in each action alternative.

**Table 3 - 28**  
**Acres of Potential and Proposed Harvest by VCU**

VCU	230	231	232 <sup>3</sup>	233	234	246 <sup>3</sup>	Total
Productive Forest	4,867	8,083	5,717	5,197	3,621	8,432	35,917
Suitable and Available <sup>1</sup>	2,114	3,408	0	2,293	1,555	0	9,370
Feasible for Harvest <sup>2</sup>	1,009	1,439	0	1,327	829	0	4,604
ALT B Proposed Harvest	409	0	0	296	231	0	936
ALT D Proposed Harvest	359	0	0	396	281	0	1,036
ALT F Proposed Harvest	0	0	0	540	287	0	827
ALT H Proposed Harvest	0	0	0	41	182	0	223

Source: Winn and Silbaugh 1999, Abt 2003.

<sup>1</sup>Excludes 1,154 acres of suitable land that is currently young growth and not available.

<sup>2</sup>Available land that has been reviewed for logging feasibility.

<sup>3</sup>Suitable and available, as well as acres feasible for harvest, are not shown because these VCUs have been deferred.

Although Table 3-28 shows the extent of the area proposed for harvest, some of the units have prescriptions designed for one or more additional harvest entries on the same acres for the remaining trees. Therefore, it is important to also consider re-entry into the same areas when evaluating what is available for future timber harvest options. For example, areas in which uneven-aged management is prescribed would likely have at least one more harvest (in some cases two more) on the same acres. These acres are listed in Table 3-25.

Land that is feasible for harvest is then stratified by volume into high, medium, and low volume categories. Refer to the 1997 Forest Plan for details on volume stratification (1997, pp. 3-18 to 3-19). This stratification is used to determine unit volume. Unit volumes are displayed in

Appendix B of this EIS (unit cards and summary page). A sustainable flow of volume is determined on a forest-wide basis (1997 Forest Plan). Sustainable flow volume is therefore not significant at the project area scale, except when considering small sale offerings for local contractors. Table 3-29 displays the total available volume in the project area and the proposed harvest volume in each alternative.

**Table 3 - 29**  
**Future Harvest Volume in the Project Area**

	Volume Proposed for Harvest (MBF)	Remaining Volume (MBF)	% Current Volume Remaining
Alternative A	0	110,486	100
Alternative B	21,408	89,078	81
Alternative D	19,824	90,662	82
Alternative F	10,882	99,604	90
Alternative H	4,145	106,341	96

Source: Winn 1999

In addition to ensuring that adequate volume remains, it is important to consider timber sale designs when evaluating future timber potential within a given area. Each of the action alternatives is designed to provide opportunities for additional economic entries to access the remaining available timber volume during average market conditions.

### Scale and Decking Yards

Timber sales sold as a result of any of the action alternatives would require on-site locations for decking wood. Depending on how the sales are sold, they may also require a scale yard. These areas usually require a clearing of two to five acres. An existing site near the Crab Bay LTF would be used in all action alternatives that would minimize potential effects of clearing vegetation. Additional storage of logs may be required here in Alternatives D, F and H if LTF operations are suspended for herring spawn in Tenakee Inlet (refer to Issue 4 in Chapter 2). Log storage may require a slightly larger cleared site in these two alternatives.

An existing rock pit may be used as a decking site at the Inbetween site, which would create minimal effects in Alternatives B and D. The existing pit may need to be enlarged for road construction initially but would then be an adequate decking site.

### Future Small Sales

Small timber purchasers have expressed interest in small sales offerings in or near Tenakee Inlet. Sales that may result from the Finger Mountain and Indian River analyses can be configured in different ways to address the needs of small operators, larger industries, and different market conditions. It is reasonable and probable to assume that if small timber operators have an interest in purchasing very small sales from this area, the sales will be structured to allow opportunity for both small and large timber operators.

The most likely factors affecting sale size will be the amount of new road construction required to access the wood and whether helicopters are required for yarding. Alternative F has higher amounts of helicopter harvest, making it less suitable for small operators. If new road construction is required, there needs to be enough volume and value in the larger sale to pay for the road while setting aside some volume that can be offered for small operators. This will depend on market conditions at the time of the sale. However, individual sale offerings resulting from the action alternatives are likely to occur over the next five years, a period during which market conditions are likely to fluctuate widely. In addition, there are currently opportunities

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within the Fog Creek (VCU 234) and Inbetween (VCU 230) drainages for small sales to occur off of existing road systems.

The alternatives would provide varying degrees of future small sale opportunity based on the road construction and management of those roads after the larger timber sale. Small sale(s) are not usually profitable enough to pay for road construction to access the timber. In addition, the 1997 Forest Plan does not allow any commercial timber harvest within 1,000 feet of the beach, except for salvage timber in some areas. For these reasons, opportunity for small sales is usually limited to maintained existing road systems. Table 3-30 shows the amount of maintained road for each alternative within the project area. Alternative B provides the most access for small sale opportunity following the initial large sale entry with 13 miles of maintained road occurring in all three entered VCUs. Alternative A (No-Action) provides the least opportunity with 2.7 miles maintained in VCU 230 only.

**Table 3 - 30**  
**Road Miles Maintained Open**

VCU	ALT A	ALT B	ALT D	ALT F	ALT H
230	2.67	7.32	4.62	0.00	0.00
233	0.00	4.16	0.00	4.45	3.63
234	0.00	1.52	0.00	2.80	0.33
Total	2.67	13.00	4.62	7.25	3.96

Source: Winn and Allio 1999. Lutz 2003

A temporary drive-down slide LTF would be constructed at Inbetween (VCU 230) in Alternatives B and D and would be removed following closure of the timber sale. Future small sales in that area could potentially occur by floating logs off the beach.

Alternatives D, F, and H propose reconstructing a slide facility at the Crab Bay LTF site that could be used for future small sale activity off of that road system. Alternative B would reconstruct a permanent bulkhead facility that is less conducive to small-sale use. There may also be some potential to float logs off the beach near this site to provide access for small operators.

The current 10-year Tongass National Forest Timber Sale Schedule for the north end of the Forest (Sitka, Hoonah, Juneau and Yakutat Ranger Districts) shows small sales totaling 0.1 to 4.0 MMBF to be offered annually. The Forest Service has prepared but not sold four other small salvage sales in Tenakee Inlet to the east of the project area and spread throughout the eastern half of the southeast Chichagof peninsula (total volume approximately 199 MBF). Several of these have been offered previously but not sold. The current 10-year Tongass National Forest Timber Sale Schedule shows the following sales: False Island, Corner Bay, and Broad Creek. The Indian River Timber Sale is not currently on the 10-year plan due to requirements for a supplement. Opening and maintaining the road system located in the Indian River Timber Sale project area behind Tenakee Springs could create small sale opportunity. There is already some existing open road in this area where small sales are being considered at this time.

## Timber Value

Because Alaska cedar is a valuable species for secondary processing, it has importance not only to large timber purchasers but also to some small independent operators for specialty wood products. Both Alaska cedar and Sitka spruce are more valuable than hemlock, which is the most abundant species that exists within the project area. For this reason, it is important that not all of the highest value trees are removed from the area leaving uneconomical harvest options in the future. However, species is only one factor in determining the value of the wood. The grade

(quality and size) of the trees harvested are perhaps more important. Species and grade mix will be determined when the sales are prepared for advertisement and a timber cruise is completed.

Alaska cedar typically grows in combination with high levels of western hemlock and some Sitka spruce. The proposed harvest of cedar and spruce in any given stand is generally proportional to its existence in the stands (Table 3-31). Exceptions to this general rule may occur when specific large diameter trees are left for marten habitat requirements and cedar or hemlock do not meet the diameter requirement. In these stands, there are no additional entries planned on these acres and the only concern is to ensure enough of the species remains in proximity to harvest areas to provide adequate seed to regenerate the stand. There are no occurrences where seed source will not remain adequate in the area to restock the units. Planting will occur where inadequate levels of a certain species regenerate to occupy growing space.

Alaska cedar accounts for approximately 15 percent of the volume available for harvest in the Finger Mountain project area. This varies by VCU from 11 to 20 percent. Table 3-31 shows the action alternatives propose to harvest a range of cedar between 15 and 22 percent. Cedar harvest in Alternative B is proportional to its existence, while Alternatives D, F, and H propose slightly higher levels of cedar harvest. Sitka spruce accounts for approximately 17 percent of the available timber in the project area and ranges between 13 and 21 percent within VCUs. The action alternatives propose less spruce harvest and a fairly proportionate amount of hemlock harvest in relation to their occurrence in the forest. Assuming that adequate volume is available in the future for both small and large sale opportunities (Table 3-29), the existence of cedar and spruce will remain available based on their natural occurrence in the landscape.

**Table 3 - 31**  
**Species Harvest (by Volume) by Alternative**

Alternative	Cedar		Spruce		Hemlock	
	% in Project Area	Proposed for Harvest	% in Project Area	Proposed for Harvest	% in Project Area	Proposed for Harvest
ALT B	15.0	15.4	17.3	16.3	67.7	68.3
ALT D	15.0	20.2	17.3	13.7	67.7	66.1
ALT F	15.0	22.4	17.3	12.3	67.7	65.3
ALT H	15.0	22.4	17.3	12.3	67.7	65.3

Source: Winn 1999; Abt 2003.

## Financial Efficiency

Current direction in Forest Service Handbook FSH 2409.18 requires a financial efficiency analysis to compare benefits and costs of a project. It should be noted that this analysis is specific to timber and does not include non-timber values. Other economic values are associated with the forest but their measurement is beyond the scope of the project. The analysis for the Finger Mountain project was conducted using the NEAT (NEPA Economic Analysis Tool) appraisal model. The financial efficiency of each action alternative is displayed in Table 3-32. The table specifically breaks out sales by logging systems to show relative costs associated with cable and helicopter logging systems. Alternative A, the No-Action Alternative, is not displayed because there is no harvest associated with it. Sale specific information such as the timber's value and volume, logging systems information, and road construction costs are found in the Project Record. Information from a database which contains the average selling values and logging costs for the last 10 timber sales sold on the Tongass is used by NEAT. Region 10 changed from Residual Value (RV) appraisals to Transactional Evidence Appraisals in 1998. The Residual Value appraisal that was used in the DEIS is no longer applicable. RV appraisals

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used pond log values, which are no longer collected. It also used selling values that included pulp, which is no longer produced in Alaska, and a mix of products for which the market has markedly changed.

The volumes in each alternative include estimates for sawlog volume utility that would be cut. These estimates are based on mapping estimates using the GIS TIMTYP and CLU data layers as described in the 1997 Forest Plan (pp. 3-18 and 3-19), stand exam data, or old cruise data from similar stands. Actual cruise volume is expected to vary somewhat from the estimates in the EIS.

Only current market scenarios were used to estimate each alternative's selling value and associated costs. Current market values are based on the third quarter of 2002. The calculated selling values are based on weighted averages for all sellers of products produced from Tongass National Forest timber sales. The differences in net stumpage values between the action alternatives can be attributed to multiple factors including:

- species composition (amount of cedar and spruce relative to hemlock)
- volume and grade (timber quality) of wood harvested
- type of harvest prescriptions
- volume and flight distances of helicopter yarding
- miles and difficulty of classified new and temporary road construction

The average selling value for the last 10 sales is adjusted for sale specific characteristics to arrive at an expected bid value. The expected bid is then reduced to provide for uncertainty. A spreadsheet called the Transactions Evidence Appraisal for NEPA calculates the timber quality and logging costs for an alternative. It selects the high and low markets based on the species composition of the alternative and prepares a 2400-17 style report for each market. The NEAT program uses the past 15 quarters data to display the frequent fluctuations that occur in timber markets. If a sale shows enough positive quarters to harvest the expected volume, one assumes that the sale has a reasonable chance of selling.

Although individual units may not be economical to harvest by themselves, the management of less productive land or land containing a high percentage of defective timber will help to increase future timber yields. The harvest of units with higher returns will help compensate for those that are less economical. The single largest difference between NEAT and earlier RV and TEA analysis prototypes is the helicopter yarding costs. They have been changed based on cost collections and are almost 25% higher than figures used in the past. For this reason, values for alternatives with helicopter yarding appear lower than those displayed in the Draft EIS. In the past, one assumed that if you sold the cable sale and built required infrastructure that the helicopter sale would sell. Given these newer costs, there is a risk that in today's market the helicopter sale might not sell.

The projected harvest volume, selling values, costs, and net stumpage values are estimates and not definitive figures. These estimates are useful for comparing the alternatives, but not for determining actual volume, costs, and values. If any action alternative is selected, all merchantable timber within units and road right-of-way clearing will be cruised to determine the quantity, quality, and value of timber. The final Finger Mountain appraisal(s) will include current quarter selling values, current cost information, and a normal profit and risk allowance to determine the minimum advertised stumpage value. Each sale within the Selected Alternative will be appraised separately at the time of offering.

**Table 3 - 32**  
**Financial Efficiency Analysis of Timber Harvest**

<b>Alternative B</b>	<b>Logging Systems</b>		<b>Total</b>
	<b>Cable</b>	<b>Helicopter</b>	
Logging Costs \$/ccf <sup>1</sup>	89.88	0	89.88
Road Costs \$/ccf <sup>2</sup>	73.86	0	73.86
Total Costs \$/ccf	163.74	0	163.74
Expected Bid \$/ccf <sup>3</sup>	(5.50)	0	(5.50)
Current Market Revenue <sup>4</sup>	\$ (291,007)	0	\$ (291,007)

<b>Alternative D</b>	<b>Logging Systems</b>		<b>Total</b>
	<b>Cable</b>	<b>Helicopter</b>	
Logging Costs \$/ccf <sup>1</sup>	98.37	214.47	108.73
Road Costs \$/ccf <sup>2</sup>	65.49	0	57.03
Total Costs \$/ccf	162.86	214.47	165.76
Expected Bid \$/ccf <sup>3</sup>	(5.62)	\$ (64.77)	(7.51)
Current Market Revenue <sup>4</sup>	\$ (260,372)	\$ (398,417)	\$ (398,827)

<b>Alternative F</b>	<b>Logging Systems</b>		<b>Total</b>
	<b>Cable</b>	<b>Helicopter</b>	
Logging Costs \$/ccf <sup>1</sup>	100.08	204.68	146.45
Road Costs \$/ccf <sup>2</sup>	68.22	0	39.37
Total Costs \$/ccf	168.30	204.68	185.82
Expected Bid \$/ccf <sup>3</sup>	(10.05)	(46.43)	(27.58)
Current Market Revenue <sup>4</sup>	\$ (171,619)	\$ (580,678)	\$ (815,619)

<b>Alternative H</b>	<b>Logging Systems</b>		<b>Total</b>
	<b>Cable</b>	<b>Helicopter</b>	
Logging Costs \$/ccf <sup>1</sup>	93.33	0	93.33
Road Costs \$/ccf <sup>2</sup>	87.42	0	87.42
Total Costs \$/ccf	180.75	0	180.75
Expected Bid \$/ccf <sup>3</sup>	(22.50)	0	(22.50)
Current Market Revenue <sup>4</sup>	\$ (285,094)	0	\$ (285,094)

<sup>1</sup> Total logging cost, including total transportation costs less road costs.

<sup>2</sup> Includes all new construction, reconstruction and temporary roads.

<sup>3</sup> Expected Bid = Selling Prices – Logging Cost (NEAT).

<sup>4</sup> Current market is based 3d Qtr 2002 Region 10 Appraisal Bulletin.

Source: Abt 2003.

The financial efficiency analysis produced net stumpage values ranging from -\$5 per ccf for Alternative B to -\$28 per ccf for Alternative F under current market conditions. All alternatives have a negative net stumpage value under current market conditions when trying to sell the cable only portion of the sales. This indicates they are close to being economically viable in today's conditions. Helicopter sales in all alternatives have a negative net stumpage value even when the cable sale builds the infrastructure. This is an indication that the offering has a higher risk of not selling. Alternative B is the most economically viable alternative under today's market conditions. This can be attributed to the absence of helicopter yarding. Alternative F has a higher risk of not selling under current market conditions. Helicopter yarding contributes to the lower net stumpage value of this alternative. Alternatives D and F have the highest logging costs of any alternative. Conversely, Alternative B has the lowest logging costs of any alternative and Alternative H has the highest average road construction costs (\$87 per ccf).

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Alternatives with higher percentages of hemlock, lower percentages of Alaska cedar, and lower grades of wood result in lower average selling values. The current timber market is fairly low for hemlock but relatively high for cedar. The percentage of cedar proposed for harvest in each action alternative relative to hemlock is displayed in Table 3-31.

Longer haul distances and more miles of road construction relative to volume harvested yield lower net stumpage values. There is a direct relationship between the extent of helicopter yarding proposed for an alternative and the logging costs. Where the helicopter harvest eliminates the need to construct large amounts of new road, reduces the hauling costs, and maintains relatively short flight distances, cost increases are offset by savings. This is generally the case in Alternative D. This is illustrated in Table 3-32, which shows the highest logging cost in Alternative D but the lowest road cost. In this alternative, the cost of the helicopter is partially offset by the savings in road construction. If helicopter only sales were offered within each alternative they would have the lowest values and the highest risk of not selling due to need to fix infrastructure. If one assumes the cable units carry the construction of the roads, then at a later date one could sell the helicopter units with a better chance of selling if market conditions were to improve. In Table 3-32, road costs for helicopter sales would then become zero. The helicopter portions of the alternatives alone have a higher risk of not selling if the infrastructure is not built first by a cable sale or if market conditions do not improve. Table 3-33 shows the distribution of helicopter yarding versus cable yarding proposed in the action alternatives.

**Table 3 - 33**  
**Proposed Harvest by Yarding System**

	Helicopter				Cable/Shovel			
	Total Proposed Harvest Acres <sup>1</sup>	% by Acres	Total MBF	% by MBF	Total Proposed Harvest Acres	% by Acres	Total MBF	% by MBF
ALT B	0	0	0	0	936	100	21,408	100
ALT D	190	18	2,347	12	846	82	17,477	88
ALT F	523	63	5,043	46	304	37	5,840	54
ALT H	0	0	0	0	223	100	4,145	100

<sup>1</sup> Proposed Harvest Acres are acres to actually receive cutting within units where harvest is proposed (does not include riparian reserves).

Source: Winn and Silbaugh 1998.

In each alternative, the sales were designed with future harvest potential in mind. Each drainage could be entered again for harvest in the remaining old-growth as well as harvest in second growth stands as products in these stands become merchantable following implementation of any alternative. The feasibility of additional harvest will again depend on the market conditions at the time, but the design will enable future economic entries under reasonable market conditions.

Alternative B proposes the most volume to be harvested with the highest capital investment. These investments include the most new classified road construction and development of a new LTF barge site at Crab Bay and a new drive down LTF at Inbetween. Although these costs cause the net stumpage values to be lower, the future use of these investments to access timber would likely reduce the cost of future entries. Alternatives D and F would require new road construction or helicopter harvest to access future timber and thus would incur higher costs in future timber sales.

Market fluctuations may vary enough to produce a positive sale in future years. Market swings could show numbers in the range of -\$30/CCF today and still reach a positive stumpage value at

time of sale. Given this range, all alternatives excluding the helicopter units would fall within that -\$30/CCF range.

### Opportunities to Improve Economics

Different management standards could be applied to any alternative to improve the economics. For example, the expected value of an alternative would be increased if timber was appraised to a 10-inch top diameter, export of the spruce or cedar was permitted, and/or the timber sale was not expected to carry all the costs of reconstructing existing roads. In the following scenario, NEAT was run where 3.1 miles of road was reconstructed separately from the timber sale. The analysis revealed the possibility of positive bid values and advertised rates. In addition, Alternatives B and H showed enough positive quarters to assume that a purchaser would bid on the sales. A positive quarter is one in which the sale would show positive values and thus be economical to harvest. See Table 3-34 below.

**Table 3 - 34**  
**Harvest Economic Efficiency Analysis: Timber Sale Values and Costs to an Operator of Average Efficiency, Given a Reduction in Road Reconstruction Costs**

	ALT B	ALT D	ALT F	ALT H
Total Cost/CCF	\$258.08	238.96	193.88	143.73
Expected Bid Value	(\$144,928)	(\$241,949)	(\$565,680)	\$183,889
Expected Bid Rate/CCF	(\$2.74)	(\$4.56)	\$(19.13)	\$14.51
Quarters Needed to Harvest Project	6	6	3	1
Number of Quarters Positive Original Runs	4	3	0	0
Number of Quarters Positive with Opportunities that Improve Economics	6	4	0	14

Alternative H has the highest total bid value and enough positive quarters. Since it had the lowest total road costs, reconstructing the 3.1 miles of road common to all alternatives had the greatest impact on improving the economics of the sale. Alternative B's expected bid value improves; though it still shows negative, it generated enough positive quarters in which the sale would be positive to log. Alternatives D and F still did not generate enough positive quarters and therefore would have the highest risk of not selling. Helicopter yarding costs and needed road reconstruction costs had large impacts on the bid values.

## Transportation and Facilities

### Access

Access to the Finger Mountain project area is by floatplane, helicopter or boat. The Alaska Marine Highway has a terminal at Tenakee Springs, which is across Tenakee Inlet approximately 4 nautical miles north of the project area. The terminal at Tenakee Springs does not accommodate standard automobiles.

#### Forest Road System

National Forest roads are classified based on current or anticipated use into one of five maintenance levels (roads may also be obliterated, decommissioned, or otherwise returned to an unroaded condition after use). Maintenance levels incorporate traffic service levels, as indicated in the following definitions.

- Maintenance Level 1 (closed) – Assigned to intermittent service roads during the time they are closed to vehicular traffic. The closure period is one year or longer. Basic custodial maintenance is performed. In the Finger Mountain Timber Sales(s) RMO summary tables, this level also applies to short-term roads after the purpose for which they were constructed is completed. At this level, drainage structures are removed, the roadbed is water barred, and basic custodial maintenance is performed to keep damage to adjacent resources at an acceptable level and to perpetuate the road to facilitate future management activities.
- Maintenance Level 2 (Traffic Service Level D) – Assigned to roads open for use by high clearance vehicles. Passenger car traffic is not a consideration. Planned post-harvest vehicle traffic in the Finger Mountain Timber Sales(s) project area is expected to be either high clearance vehicles (HCV) or all-terrain vehicles (ATV) used to accomplish administrative and recreation access objectives. Roads will be logged out and brushed as necessary to provide passage for ATVs. The road prism will be maintained to provide for passage of high clearance vehicles. Barricades will be placed at the entrance of each road maintained for ATV access to effectively block vehicles greater than 50" in width.
- Maintenance Level 3 – Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities.
- Maintenance Level 4 – Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds.
- Maintenance Level 5 – Assigned to roads that provide a high degree of user comfort and convenience. Normally, roads are double-lane and paved, or aggregate surfaced with dust abatement.

Of the 17.6 miles of existing road in the project area, 14.5 miles are currently closed to motorized vehicles (Maintenance Level 1). The remaining 3.1 miles located in the Inbetween drainage (VCU 230) are open to high clearance vehicles (Maintenance Level 2).

#### Road Development

Table 3-35 displays the miles of new and reconstructed roads proposed by alternative. (See road cards in Appendix C for details on each road segment.) Road reconstruction consists of roadbed and ditch line repairs, culvert or bridge replacement, and resurfacing. Temporary roads (usually short spurs) are closed and/or obliterated after the completion of harvest.

Alternative B has considerably more road construction and reconstruction than the other alternatives. Alternative F requires the least miles of new road construction and has the fewest miles of roads overall (Table 3-35).

**Table 3-35**

**Miles of New and Reconstructed Road by Alternative**

Existing Roads	ALT B		ALT D		ALT F		ALT H	
	New	Recon.	New	Recon.	New	Recon.	New	Recon.
System Roads	17.6	9.8	13.8	6.7	13.0	0.0	9.5	0.6
Temporary Roads	0.0	10.9	---	8.0	---	4.3	---	3.1
Total	17.6	20.7	13.8	14.7	12.95	4.3	9.5	3.7

Source: GIS Project Roads Layer; RMOs.

## Access Management

The effects of the transportation system on other resources are considered in the specific resource sections (e.g., Water, Soil, and Fish; Subsistence; Silviculture and Timber Management; and Management Indicator Species and Endemic Terrestrial Mammals). This section focuses on the effects of each alternative on the transportation system and discusses post-project access management.

The identification of the minimum road system needed for the safe and efficient travel and for administration was based on economic and resource concerns and comments received during scoping and public meetings for the Finger Mountain project. Motorized road access to several areas within the Finger Mountain project area would be eliminated due to the high cost of road maintenance and/or the sensitivity of fisheries, wildlife, and subsistence resources. Restrictions apply to all motorized vehicles, including passenger vehicles, three- and four-wheeled sport vehicles, and motorcycles to protect wildlife. In some cases roads may be seasonally closed to reduce hunting and trapping pressure or during sensitive periods (e.g., nesting or denning).

In areas where long-term timber management is planned, some roads would be left open, primarily to provide for timber harvest, salvage, firewood, free use, and other management activities.

Efforts to minimize scenic impacts created by logging roads and landings were made during project planning. Where feasible, roads and landings with a visual quality objective of modification were located to minimize or eliminate their visibility.

After the completion of harvest activities, roads are managed for the type of use and traffic allowed. Road access is managed to prevent damage to the roadway and to meet objectives for resources such as fish, wildlife, and water quality, while maintaining public use and access for timber management and related activities. The Sitka Ranger District's Travel Access Management Plan included public and agency involvement, and interagency evaluation of road management objectives. Post-harvest access needs/traffic strategies of each road segment are defined by the following categories or strategies (refer to road cards in Appendix C for specific proposed management of each road by alternative).

- Encourage - Motor vehicle use is encouraged by appropriate signing, public notification, and active maintenance of the road prism.
- Accept - Motor vehicle use is allowed but not encouraged, while the road is maintained for administrative access.

# 3 Environment and Effects

- Discourage - Motor vehicle use is discouraged by allowing alder growth at the road entrance and road prism deterioration within acceptable environmental limits (depending on designated maintenance level), and leaving blowdown where it falls. To discourage use, the road may also be signed as “Not Maintained for Motor Vehicle Traffic.”
- Eliminate - Motor vehicle use is eliminated by physically blocking the road. Where prescribed for long-term intermittent roads, this strategy is achieved by placement of impassable barricades at road entrances. On short-term roads, removal of drainage structures effectively blocks vehicle traffic.
- Prohibit - Motor vehicle use is prohibited by a road order (Code of Federal Regulations [CFR] closure). Implementation of this strategy on remote road systems may require the installation of gates in addition to public notification and appropriate signing.
- Prohibit Seasonally - Road is closed to motor vehicle use at times during the normal operating year. For all alternatives, seasonal prohibitions would be used as necessary to mitigate impacts to wildlife and subsistence resources (e.g., closure during buck or doe deer hunting season). Administrative and permitted use of the roads would continue during closure periods, but only for specific permitted uses. Seasonal closures may be used in combination with cooperative efforts with fish and game protection agencies.

While Forest Service roads can be closed by regulation (36 CFR 212.7 and 261), applicable law confers a statutory right of entrance to public lands to search for minerals and to access mining claims; however, the project area has no claims at present. These types of access would not be restricted. However, miners and prospectors would be required to obtain a permit to use restricted roads.

The access management strategy for the Finger Mountain project area is proposed with the following key points.

- Road use objectives would “eliminate” rather than “prohibit” road use by motor vehicles (see definitions above). Formal CFR road closures prohibiting such use are not currently planned for any roads but could be required in the future if it is determined that use by motor vehicles is occurring.
- The access plan for the existing roads in the project area focuses primarily on reducing future road maintenance costs while keeping open those roads identified as important by the public. The access plan also closes roads in important subsistence use areas.
- Roads placed in Maintenance Level 1 status would have all drainage structures removed. This equates to a State Forest Practices Act (FPA) status of “closure.” Roads that would be placed in Maintenance Level 2 status equate to a FPA status of “inactive.”

To meet access management objectives, many roads would be closed after the completion of harvest activities. In Alternative B, 10.6 miles would be closed. Alternative D would close 15.0 miles, Alternative F would close 2.2 miles of road, and Alternative H would close 3.0 miles of road. The current access management plan proposed road closures are shown on the Road Management Objectives maps in Appendix C.

Southeast Alaska’s coastline consists of approximately 30,000 miles of tidal shoreline, which is roughly 60 percent of the total Alaskan coast. Within this region, a great diversity of habitats comprises Southeast Alaska’s complex estuary and tidal environments. Shellfish and juvenile salmon are part of this complex and dynamic ecosystem that also includes shrimp, flatfish, marine worms, echinoderms, sponges, sea anemones, shellfish, plankton, marine algae, and other organisms.

The marine environment potentially affected by the alternatives consists of a 30-mile stretch of shoreline within Tenakee Inlet, bordering the project area along the northern boundary of VCUs 230, 231, 232, 233, and 234. All the shoreline is National Forest land.

## Log Transfer Facilities

### Proposed Log Transfer Facilities

Two different types of LTFs are proposed for development in the Finger Mountain project area: a drive-down ramp or low angle slide and a land-to-barge LTF. The land-to-barge facility utilizes a bulkhead for transferring logs onto a barge. The drive-down ramp typically utilizes a log loader to place the logs at the bottom of the ramp which then float with the incoming tide and are rafted up. Each LTF requires: (1) a log transfer area; (2) an equipment off-loading ramp; (3) an upland log storage area for barge facilities or log raft storage areas for drive-down ramps and slides; and (4) usually a small airplane and boat dock. The actual configurations and areas are part of the LTF permitting process that is done before any field operations begin.

#### Inbetween

Alternatives B and D propose construction of a drive-down ramp near the mouth of Inbetween Creek on Tenakee Inlet. The shoreline would be returned as close as possible to its original profile upon completion of harvest activities. Bark accumulation is not anticipated at the Inbetween site, which has good flushing due to current and tides.

#### Crab Bay

Alternatives B, D, F, and H all propose reconstruction of an existing LTF at the mouth of Crab Bay. The Crab Bay facility would be a permanent low-angle slide in Alternatives D, F, and H and a bulkhead barge facility in Alternative B. The Crab Bay LTF is proposed as a permanent structure, available for salvage and small timber sales in the future. LTF reconstruction and operation at the Crab Bay site have potential to impact herring due to concentrations of tree bark from rafted logs, sediment produced during LTF reconstruction and operation, and crushing of herring eggs deposited on the slide ramp. Eel grass beds occur in shallow areas of Crab Bay, especially along the south side. These provide habitat for crabs, juvenile salmonids, herring, and other species dependent on the shallow marine environment for at least part of their life cycle.

Table 3-36 displays proposed timber volume to be moved over the various LTFs by alternative.

**Table 3 - 36**  
**Log Transfer Sites and Harvest Volume by Alternative**

Log Transfer Site	ALT B (MMBF)	ALT D (MMBF)	ALT F (MMBF)	ALT H (MMBF)
Inbetween Creek	8.8	6.8	0	0
Crab Bay	12.6	13.0	10.9	4.1

Putting bark into the water at an LTF requires a National Pollution Discharge Elimination System permit. Monitoring of environmental effects from this timber entry would limit discharge to that allowed under existing permits.

All sites were investigated and inventoried by marine biologists in 1991 and 1998 to determine the existing condition of plant and animal species. The site for Inbetween is a new site. No bark or manmade objects were found at the former Crab Bay site. Dive inventories are located in the planning record.

# 3 Environment and Effects

## Marine Environment

Intertidal and subtidal marine environments of Southeast Alaska are subject to the effects of log transfer and storage facilities; these are the points of concentrated activity associated with marine transfer of logs. LTF sites are ideally located in areas adjacent to deeper water. This is preferred because deeper water is generally less productive, and the associated stronger currents aid in dispersing bark and debris that may enter the water, thereby reducing impacts on marine life.

The major potential impact involving low angle slide and drive-down ramp type LTFs is the accumulation of log debris in the marine environment. During the transfer of logs from land to water, bark is sloughed off and deposited on the ocean bottom. Bark is continually sloughed off by agitation from wind and waves while logs are in rafts. Bark accumulation on the bottom can diminish habitat for benthic invertebrates, can alter vegetation used as food, and can alter rearing sites for marine fish and other organisms. Drive down slides may also be conduits of unfiltered fine sediments from sort yards and access roads. Barge facilities often require fill to extend access to deep water. The fill may interrupt shallow water, shoreline migration of salmonid smolt.

The Alaska Timber Task Force Citing guideline for LTFs is designed to mitigate the potential effects of bark dispersal and toxicity by: (1) locating LTFs in areas with the least productive intertidal and subtidal zones; (2) avoiding sensitive habitats; (3) avoiding shallow water; and (4) locating LTFs along or adjacent to straits, channels, or deep bays where currents are strong enough to disperse sunken or floating wood debris.

### Herring

Tenakee Inlet is considered one of fourteen major herring stock areas in Southeast Alaska. In the past, when the amount of herring produced in this area has exceeded 3,000 tons, the Alaska Department of Fish and Game (ADF&G) has allowed a bait fishery. The fishery occurred from 1978 through 1990. Weak herring returns prevented fishing from 1990 through 1996. Since 1996, herring stock numbers have rebounded, and the bait fishery was reopened. For 12 of 21 spawning seasons from 1979 through 1999, herring spawn was documented by ADF&G along the shoreline at or near the Crab Bay LTF site.

Due to the high likelihood that herring will spawn in and near Crab Bay, reconstruction and operation of the LTF will be restricted (i.e., no use from April 15 – June 15 each year) unless the Forest Service and ADF&G decide otherwise. Fuel transfers would be allowed during this period to maintain inland heavy equipment operations. The contractor(s) would be responsible for any and all clean-up costs and for civil damages resulting from the negligent spill of any hazardous material, including fuel. No logs would be placed or stored directly in saltwater, nor would equipment be operated on intertidal rocks. Alternatives D, F, and H propose reconstruction of a low-angle slide with timing restrictions on both the reconstruction and operation of the facility. Fuel transfers would be allowed during this period to maintain inland heavy equipment operations.

### Logging Camps

All action alternatives propose use of a floating logging camp anchored in Crab Bay. Crews would commute to the project area by boat. No other logging camp facilities are proposed.

### Mitigation and Monitoring

Mitigation measures for forest resources applicable to road location, construction and/or design are specified on the road cards (Appendix C). A listing of site-specific mitigation measures applicable to each unit and road is also found in Appendix E. These follow the requirements of the 1997 Forest Plan, BMPs, and other direction. Many of these measures are discussed under the specific resource sections of this chapter. The Forest Service is cooperating with the State of

Alaska through the Title 16 Memorandum of Understanding for structure design at stream crossings to ensure fish passage where necessary.

A major consideration for roads is the need for construction timing restrictions to minimize potential effects to juvenile fish and fry. The Sitka Ranger District has developed several options to increase the length of the construction window, based on previous project experience. These include installation of log stringer bridges to allow equipment to cross a creek without any in-stream construction; damming and diverting water around the site during culvert placement; and installing culverts or bridges during low flow periods. ADF&G biologists were consulted to determine appropriate options for each site.

The reconstruction and use of the Crab Bay LTF site would be restricted as described above to protect against possible adverse effects to the herring spawn in Tenakee Inlet.

Tongass National Forest BMP monitoring protocol requires annual field monitoring of all roads and LTFs associated with timber harvest. This, along with additional implementation and effectiveness monitoring completed by the Forest would determine the effectiveness of the 1997 Forest Plan standards and guidelines and BMPs in protecting and maintaining aquatic habitat and resources. While reconstructing and using the Crab Bay LTF site, herring would be monitored each spring in and near Crab Bay. As stated above, reconstruction and operation of the LTF will be restricted (i.e., no use from April 15 – June 15 each year) unless the Forest Service and ADF&G decide otherwise. Dive surveys would be completed at LTF sites as required in LTF use permits to monitor bark accumulation and determine the condition of plant and animal species.

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## Scenery

The following discussion and analysis are based on and summarized from the Scenic Quality and Recreation Effects Analysis Reports for the Finger Mountain project area. The scenic resources of the Tongass National Forest are also discussed in the 1997 Forest Plan, Chapter 3. Applicable direction may be found in Chapters 3, 4, and Appendix F of the 1997 Forest Plan.

### Project Area Description

The scenery of the Finger Mountain project area varies from low rolling hills along the front of the valleys, to the surrounding ridgelines that rise up to 3,000 feet near the back of the valleys. The area is composed of five major drainages along Tenakee Inlet and one that empties into Peril Strait. The mountains have fairly extensive alpine areas with few or no trees and steep, densely forested hillsides that sometimes exhibit a combination of muskeg openings, brush, and scattered tree cover. There are two major saltwater bays (Saltery and Crab) that feed into Tenakee Inlet. These offer views of large tidal areas at the head of the bays and dense forest along the sides. Most of the project area (73 percent) has a natural appearance. The rest is either moderately altered (7 percent) or heavily altered (20 percent).

The 1997 Forest Plan designates visual resource management standards, termed visual quality objectives (VQOs), on National Forest System lands. These objectives are based upon a combination of factors: the variety of color and texture seen in the landscape; the importance of scenic quality to the people viewing the landscape; and the distance between the landscape and the people viewing it, referred to as the distance zone. Three distance zones are used in this analysis of changes to the landscape. Foreground is seen within 0.25 to 0.5 miles, middleground from 0.5 to 5 miles, and background between 5 to 10 miles. Areas farther away than 10 miles are considered not visible.

Visual quality objectives provide a baseline from which to measure changes in the scenic quality of the landscape resulting from management activities. The objectives are described as five different degrees of acceptable landscape alteration: preservation, retention, partial retention, modification, and maximum modification (see the Glossary for detailed definitions).

Two of the six VCUs within the project area (VCU 232 and 246) were assigned a Semi-remote Recreation land use designation in the 1999 Forest Plan ROD. They are now designated Timber Production areas under the 1997 Forest Plan ROD. No activities are proposed under any of the action alternatives and no scenic impacts will occur in these areas. Of the land in the other four project area VCUs in which timber harvest is also allowed (VCUs 230, 231, 233, and 234), 15 percent is classified under the retention Visual Quality Objective; 1 percent is classified as partial retention; 5 percent is classified as modification; and 80 percent is classified as maximum modification.

The 1997 Forest Plan also identifies priority travel routes from which the effects on the scenic resource are analyzed. For Finger Mountain these include the Alaska Marine Highway System ferry route in Chatham Strait, Peril Strait, and Tenakee Inlet, and heavily used small boat routes.

### Current and Projected Visual Condition

The Finger Mountain project area encompasses six value comparison units (VCUs), each consisting of distinct visual environments. All harvest units proposed in all alternatives are consistent with the VQOs adopted by the 1997 Forest Plan. In many cases, the VQO is met based on the combination of size, shape, aspect, and harvest prescription of the units.

While proposed harvest units may meet their assigned VQO, when combined with units that have been previously harvested the total visual disturbance may exceed an acceptable level. Cumulative visual disturbance is most obvious with even-aged management using clearcutting. Two-aged management generally maintains a less obvious visual appearance than clearcutting. “Optimally, disturbance and adjacency would not be an issue with carefully planned uneven-aged management (i.e. partial stand removal)” (Forest Plan FEIS 1997, Appendix B). Approximately 30 years is required for a regenerated clearcut to return to a continuous textured landscape. Depending on the land use designation, the distance zone from which the area is viewed, and the capability of the landscape to visually absorb management activities (visual absorption capacity), the amount of disturbance considered acceptable in a given area over a 30-year period is referred to as the Percent Allowable Visual disturbance (Appendix B of the Forest Plan FEIS).

The Percent Allowable Visual disturbance is given as a percentage based on total acres and is a generalized constraint rather than a forest-wide standard and guideline. In some areas, the amount of harvest that took place prior to implementation of the 1997 Forest Plan exceeds the level given as the generalized constraint for visual disturbance in the 1997 Forest Plan. The previous Forest Plan contained different standards for evaluating cumulative visual disturbance.

### **Inbetween (VCU 230)**

This VCU is between Seal Bay and Saltery Bay. The area receives use from campers, hunters, fishermen, and beachcombers. Most of this VCU is visible in the middleground from a small boat route in Tenakee Inlet. The remainder of the VCU cannot be seen from priority travel routes and use areas. Between 1985 and 1987, 247 acres were logged and 3.5 miles of road were constructed. One harvest unit from that sale created scenic impacts visible from Tenakee Inlet. The rest of the units are located up the valley and are not readily visible. The existing visual condition is predominately natural appearing (77 percent) with a small amount appearing heavily altered (2 percent). The remainder appears altered but not overwhelming since it is seen in the background (21 percent).

Alternatives B and D would have impacts in this VCU. Visual quality objectives for this VCU are 12 percent retention, 6 percent modification, and 82 percent maximum modification. Maximum modification means that, while management activity may dominate the characteristic landscape, the distant background view of the area should reflect natural occurrences within the surrounding area. All units are consistent with the adopted VQOs. The percent allowable visual disturbance would be exceeded in Alternative D for areas that have a VQO of modification with a low visual absorption capacity. However, given the amount present (3 acres) it would not be possible to harvest anything without exceeding the constraint.

### **Saltery Bay (VCU 231)**

This VCU is viewed in the middleground from the small boat route and anchorage located in Tenakee Inlet with a small percentage being seen in the background. Slightly more than half of this VCU is visible from priority travel routes and use areas. Between 1956 and 1965, some areas of the slope facing the water were logged, resulting in noticeable texture and color variations on the landscape when viewed from Tenakee Inlet. The existing visual condition is predominately natural appearing (84 percent), although some areas have been altered by harvest that resembles natural disturbances (16 percent). Harvest in VCU 231 has been deferred at this time, so there would be no impacts.

### **South Crab Bay (VCU 233)**

VCU 233 is seen from a small boat route in Tenakee Inlet and an anchorage in Crab Bay. The area can also be seen in the distance from the ferry route in Tenakee Inlet. Approximately two-

# 3 Environment and Effects

thirds of this VCU is visible from priority travel routes and use areas. Timber harvest on 348 acres occurred between 1977 and 1979 along the shore and up the east side of the valley. The harvested units along the shore are visible, but they have begun to return to the surrounding texture and color. The current condition is predominately natural appearing (63 percent). Previously harvested areas appear clearly altered but are not overwhelming when seen in the background (37 percent).

Visual quality objectives for VCU 233 are 20 percent retention, less than 1 percent partial retention, 6 percent modification, and 74 percent maximum modification. The area in this VCU with a 1997 Forest Plan land use designation of Modified Landscape has two VQOs: partial retention and modification. Partial retention requires that management activities remain visually subordinate to the character of the land. All units proposed in the action alternatives are consistent with the adopted VQO. The percent allowable visual disturbance is exceeded for the area identified with a VQO of modification and a low visual absorption capacity based on the existing condition. In Alternatives B and D, there would be slightly more disturbance than is recommended to stay within the allowable disturbance guideline for this combination of modification and low visual absorption capacity.

## Fog Creek (VCU 234)

This VCU faces the City of Tenakee Springs. Slightly more than 70 percent of this VCU is visible from priority travel routes and use areas as middleground, including the Alaska Marine Highway and small boat routes in Tenakee Inlet. Approximately one-quarter is unseen. In 1978 and 1979, 526 acres of timber were harvested and 9 miles of road were built. Most of the logged units are not readily apparent because of their location up the valley. Nearly half of the area is currently natural appearing (47 percent) and the remainder is clearly altered but is not overwhelming when seen in the background (53 percent).

Visual quality objectives for VCU 234 are 16 percent partial retention, 2 percent modification and 82 percent maximum modification. All units are consistent with the adopted VQO. In Alternatives B and D, there would be slightly more disturbance than is recommended to stay within the allowable disturbance guideline for this combination of maximum modification and low visual absorption capacity.

### Forest Plan Priority Routes and Use Areas

The 1997 Forest Plan established visual quality objectives for all areas within the project area. All units were designed to meet visual quality objectives. Changes to a unit's silvicultural prescription and/or the selection of harvest units within an alternative to address scenic concerns exceed the standards in the 1997 Forest Plan. The 1997 Forest Plan identifies visual priority routes and significant use areas from which to analyze impacts of the project on scenic views. For the Finger Mountain project area, these include the Alaska Marine Highway travel routes in Tenakee Inlet and Peril Strait, several small boat routes, boat anchorages, recreation areas, the Tenakee Trail and the community of Tenakee Springs (refer to Appendix F in the 1997 Forest Plan).

### Project-specific Viewpoints

Throughout the planning process the public raised concerns over possible scenic effects resulting from the Finger Mountain project on four of the visual priority routes and use areas mentioned above. These areas include the community of Tenakee Springs, Tenakee Inlet, Crab Bay, and Saltery Bay. These areas received special attention given the sensitivity of Tenakee Springs residents and users of Tenakee Inlet to the issue of scenic effects. Table 3-37 compares the scenic effects of both previous harvests and the proposed harvest and road construction associated with the alternatives from each of these specific viewpoints. The effects are described

as slight (little or no alteration is visible), moderate (some effects are visible but do not dominate the landscape), and high (changes are noticeable and in some cases dominate the landscape).

Alternative D would have the greatest effect, with the most visible harvest to three of the viewpoints. Alternatives F and H would have the least, with little additional harvest and road construction seen. None of the alternatives would have any additional effect in Saltery Bay, because harvesting has been deferred in VCU 231 in all alternatives.

**Table 3 - 37**  
**Change in Visual Resource for Project Specific Viewpoints**

ALT	Tenakee Springs	Tenakee Inlet	Crab Bay	Saltery Bay
A	slight	slight	slight	slight
B	moderate	moderate	moderate	slight
D	high	high	high	slight
F	slight	slight	slight	slight
H	slight	slight	slight	slight

Source: Onderkirk 1999

## Visual Recovery Rates

The potential for visual impact is greatest right after timber is harvested. Stumps and debris dominate the view of harvested units located in the foreground (up to 1/2 mile) where most of the canopy has been removed. In units that are only partially cut, visual signs of harvest are less evident and may not be seen. Activities associated with road construction, such as cut and fill slopes, rock pits, and turnouts will be readily visible to the observer. As seen in the middleground (1/2 mile to 3 miles), vivid distinctions in texture of the mature stand and the harvest unit will be apparent. Exposed boles and limbs of the adjacent stand will dominate the visual setting.

**Year Five:** By the fifth year following harvest, young trees and shrubs such as blueberry and salmonberry will dominate the units. In some cases, young alder will be present where disturbance occurred. In the foreground, the visual effects of a harvest unit will be evident where most of the canopy was removed, but the shrubs and young trees will begin to cover over the stumps and exposed ground. In the middleground, the harvest unit will remain evident, with sharp contrast in color and texture. However, in stands with a substantial number of larger trees left in the unit following harvest (25 to 50 percent harvest), there may be little to no sign of harvest.

**Year Twenty:** The young trees will be approximately fifteen feet tall by this time. In the foreground, there will be new stands of spruce and hemlock, with some yellow-cedar where 75 to 100 percent of the original stands were removed. If views were created by the harvest, they will now become limited. Precommercial thinning (usually done when the stand is 15 to 20 years old) may create a well-defined stand. In the middleground, the contrast between the new forest and the mature forest will be obvious where more than 50 percent of the stand was removed. It is likely that harvests where 25 to 50 percent of the unit was removed will be less obvious to the observer and in some cases may not be seen at all.

**Year Fifty:** The new forest will reach a height of approximately fifty feet. As seen in the middleground, stands at this age where little of the original stand was retained would be about half the height of the existing mature stands, providing a smooth visual transition at the harvest unit boundary. Should new harvest occur adjacent to the 50-year stands, the effect will be an even less obvious transition. In the foreground, growth of the stands will limit views beyond the original units. At this time, the canopy will be closed, and the new forest will appear very dense.

# 3 Environment and Effects

In units in which 50 percent or less of the original stand was harvested, it is expected that the new forest will be less dense, with larger trees remaining in the overstory.

**Year Eighty:** The stands will have reached 75 percent of their mature height. From the middleground, there will be less distinction between these stands and adjacent mature forests, with no distinction where 50 percent or less of the unit was cut at the time of harvest. The canopy will appear full with crowns touching, allowing little sunlight to reach the forest floor and little understory vegetation to establish. In stands where 25 to 50 percent of the unit was harvested, much, if not all, of the understory vegetation will be maintained. In some cases the understory may become more abundant due to increases in light from the harvest. As seen in the foreground, larger tree boles will be visibly dominant from the road in the original units where the majority of the forest was harvested, and the canopy will be visible at approximately thirty feet from the forest floor.

**Year 100:** Little difference will be noticeable between the 100-year forest and an adjacent mature forest. Trees would reach approximately 100 feet and appear healthy, lush, and with full canopy. On sites where most of the canopy was harvested, the foreground forest will be extremely dense, with little light reaching the forest floor. Where 25 to 50 percent was cut, there will be no difference.

## Log Transfer Facilities and Logging Camps

The large size, linear bold shape, and saltwater location of LTFs generally present a very strong visual impact when viewed within a foreground distance. However, the relatively low profile helps to blend them into background views. Clearings for sort yards and logging camps may also add to the visual impacts associated with LTFs. However, their location is usually on fairly level or gently sloping sites, which helps to absorb much of their visual contrasts when viewed from saltwater. Each of the alternatives proposes the use of a floating logging camp anchored in Crab Bay. Visual impacts from these are considered to be much less than more permanent upland camps.

Drive-down and slide-type LTFs usually present less of a visual impact than larger bulkhead-type facilities. The bold form of the bulkhead associated with barge LTFs prevents it from blending into the surrounding landscape. Often, the type of material and color of the bulkhead create strong contrasts with the landscape that can be seen even in the background. Careful selection of materials and colors can effectively mitigate such contrasts. The following LTFs are proposed in one or more of the alternatives:

### Inbetween LTF

Alternatives B and D propose constructing an LTF located in Tenakee Inlet (VCU 230) where it would be seen from the small boat travel route. The VQO for VCU 230 is modification. The LTF would be constructed as a temporary drive-down ramp near the existing LTF site. The LTF will meet the VQO provided mitigation measures V11 and V12 are incorporated to minimize visibility.

### Crab/Fog LTF

This LTF is located at the mouth of Crab Bay on the south shore (VCU 233) where it would be seen as middleground from Tenakee Springs, the ferry route, and the small boat route. This area has a VQO of partial retention. It would be constructed on the existing LTF site as a permanent low-angle slide in Alternatives D, F, and H. In Alternative B, it would be reconstructed as a bulkhead barge facility. Since no land camp is proposed at this site, all alternatives would likely allow VCU 233 to meet its VQO.

## Conclusions

Analysis of the visual resource using the 1997 Forest Plan identified priority travel and small boat routes throughout the project area shows Alternatives F and H have the fewest impacts to the scenic resource. Alternatives B and D are equivalent and would have more scenic impacts than Alternatives F or H. Alternative D has a higher number of units, but Alternative B has some units with harvest prescriptions that present a greater risk for impacts. Either B or D would improve through more use of harvest prescriptions that retain at least 50 percent of the volume and have openings no greater than 2 to 3 acres on visible units. As shown in Table 3-37, Alternative D would have more scenic impacts than Alternative B from the project-specific viewpoints identified for this project.

# 3 Environment and Effects

## Recreation

The following discussion and analysis are based on the Recreation Resource Inventory and Effects Analysis Report for the Finger Mountain project area. The report is on file in the Finger Mountain planning record. All figures pertaining to recreation are located at the end of this section.

The Recreation section begins by describing the recreation opportunities in the project area and the effects of the action alternatives on these opportunities. This is followed by a discussion of current recreation use and the effects of the alternatives on the use. Analysis of opportunity and use addresses the following concerns identified during public scoping:

- impacts to recreation resources and opportunities resulting from timber harvest,
- related impacts to tourism businesses (particularly in nearby Tenakee Springs),
- reductions in subsistence and sport hunting,
- reductions in salt and freshwater fishing, and
- competition from logging camp residents.

### Recreation Opportunities

The Finger Mountain project area encompasses 72,780 acres, and includes natural recreation attractions such as mountains, large forested valleys, 40 miles of rocky shorelines with gravel beaches, and abundant wildlife and fisheries resources. Six salt-water estuaries are located within its borders (Little Seal Bay, Saltery Bay, Crab Bay, Middle Crab Bay, Fog Creek, and Broad Creek).

#### Recreation Opportunity Spectrum (ROS)

Recreation opportunities in the project area were inventoried using the Recreation Opportunity Spectrum (ROS). The ROS is an analytical tool developed by the Forest Service to analyze and describe various recreation experiences. It is based, in part, on the extent to which the natural environment has been modified by human activity and development. Recreation opportunities within the project area range from an experience of solitude, challenge, and risk in a natural-appearing environment (Primitive) to experiences of solitude with little challenge or risk in areas where vegetation alterations from past timber harvest and roading dominate the landscape (Roaded Modified). In Table 3-38, Alternative A displays current ROS classes and acreages for the project area. (See also Figure Rec-1.)

In each action alternative, road construction and timber harvest would change the recreation opportunities from a more primitive experience to a more developed experience. Alternative B would have the greatest impact to primitive opportunities, with an 8 percent decrease in Semi-primitive Non-motorized acreage and a corresponding 8 percent increase in Roaded Modified acreage. Alternative F would have the least impact, with a 4 percent decrease in Semi-primitive Non-motorized acreage and a corresponding 4 percent increase in Roaded Modified acreage (see Table 3-38 and Figures Rec-2 through Rec-5).

Figure Recreation –1

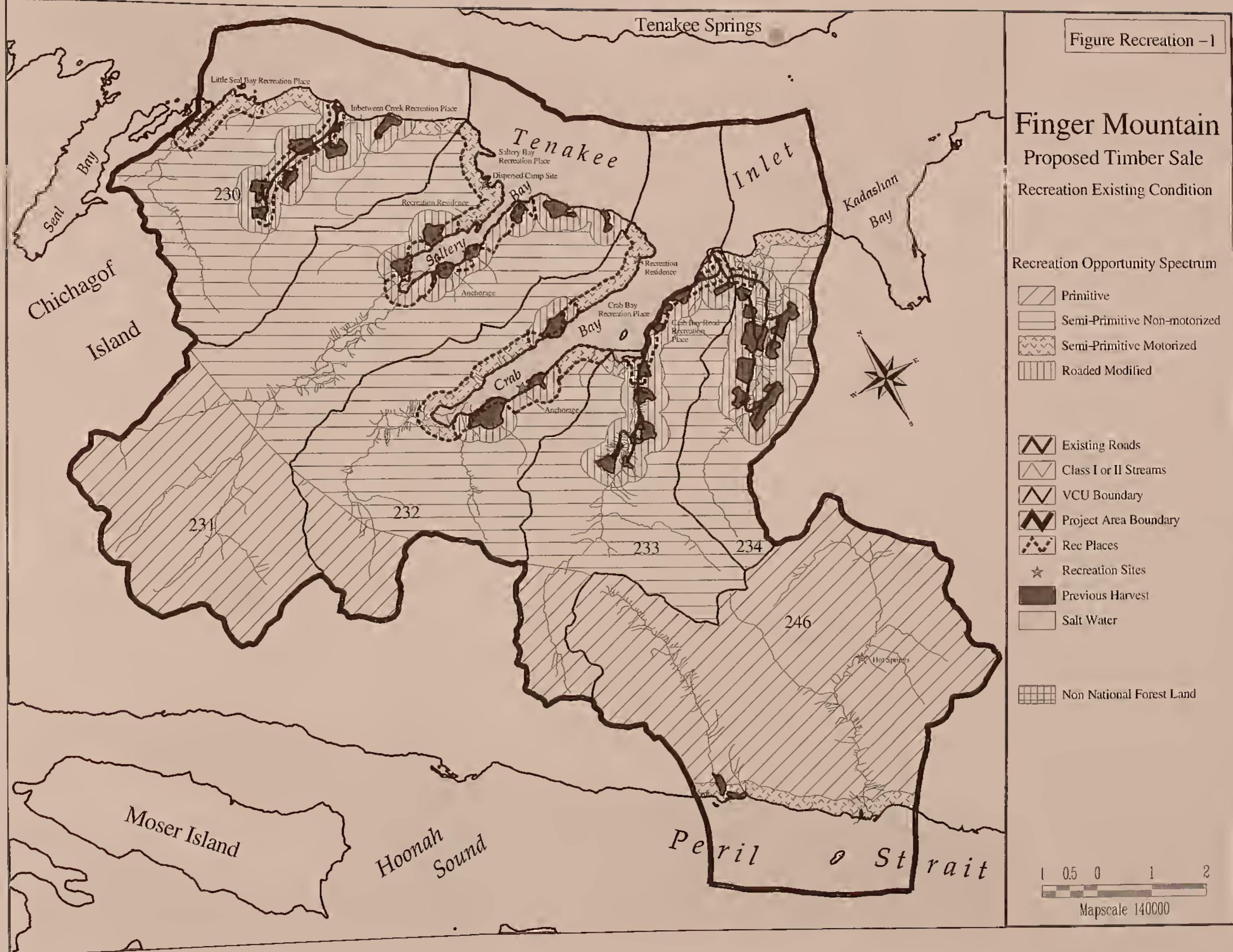




Figure Recreation -2

## Finger Mountain Proposed Timber Sale Recreation Alternative B

### Recreation Opportunity Spectrum

- Primitive
- Semi-Primitive Non-motorized
- Semi-Primitive Motorized
- Roaded Modified

- Existing Roads
- Proposed Roads

- Class I or II Streams
- VCU Boundary
- Project Area Boundary
- Log Transfer Facility
- Rec Places
- Recreation Sites
- Previous Harvest
- Proposed Harvest
- Proposed 25% Harvest units
- Salt Water

Non National Forest Land

1 0.5 0 1 2  
Mapscale 1:40000





Figure Recreation –3

**Finger Mountain  
Proposed Timber Sale  
Recreation Alternative D**

**Recreation Opportunity Spectrum**

- Primitive
- Semi-Primitive Non-motorized
- ▨ Semi-Primitive Motorized
- ▨ Roaded Modified

- ▨ Existing Roads
- ▨ Proposed Roads

- ▨ Class 1 or II Streams
- ▨ VCU Boundary
- ▨ Project Area Boundary
- ▨ Log Transfer Facility
- ▨ Rec Places
- ★ Recreation Sites
- ▨ Previous Harvest
- ▨ Proposed Harvest
- ▨ Proposed 25% Harvest units
- ▨ Salt Water

▨ Non National Forest Land

1 0.5 0 1 2  
Mapscale 140000





Figure Recreation –4

**Finger Mountain  
Proposed Timber Sale  
Recreation Alternative F**

**Recreation Opportunity Spectrum**

-  Primitive
-  Semi-Primitive Non-motorized
-  Semi-Primitive Motorized
-  Roaded Modified

-  Existing Roads
-  Proposed Roads

-  Class I or II Streams
-  VCU Boundary
-  Project Area Boundary
-  Log Transfer Facility
-  Rec Places
-  Recreation Sites
-  Previous Harvest
-  Proposed Harvest
-  Proposed 25% Harvest units
-  Salt Water
-  Non National Forest Land

1 0.5 0 1 2

Mapscale 1:40000

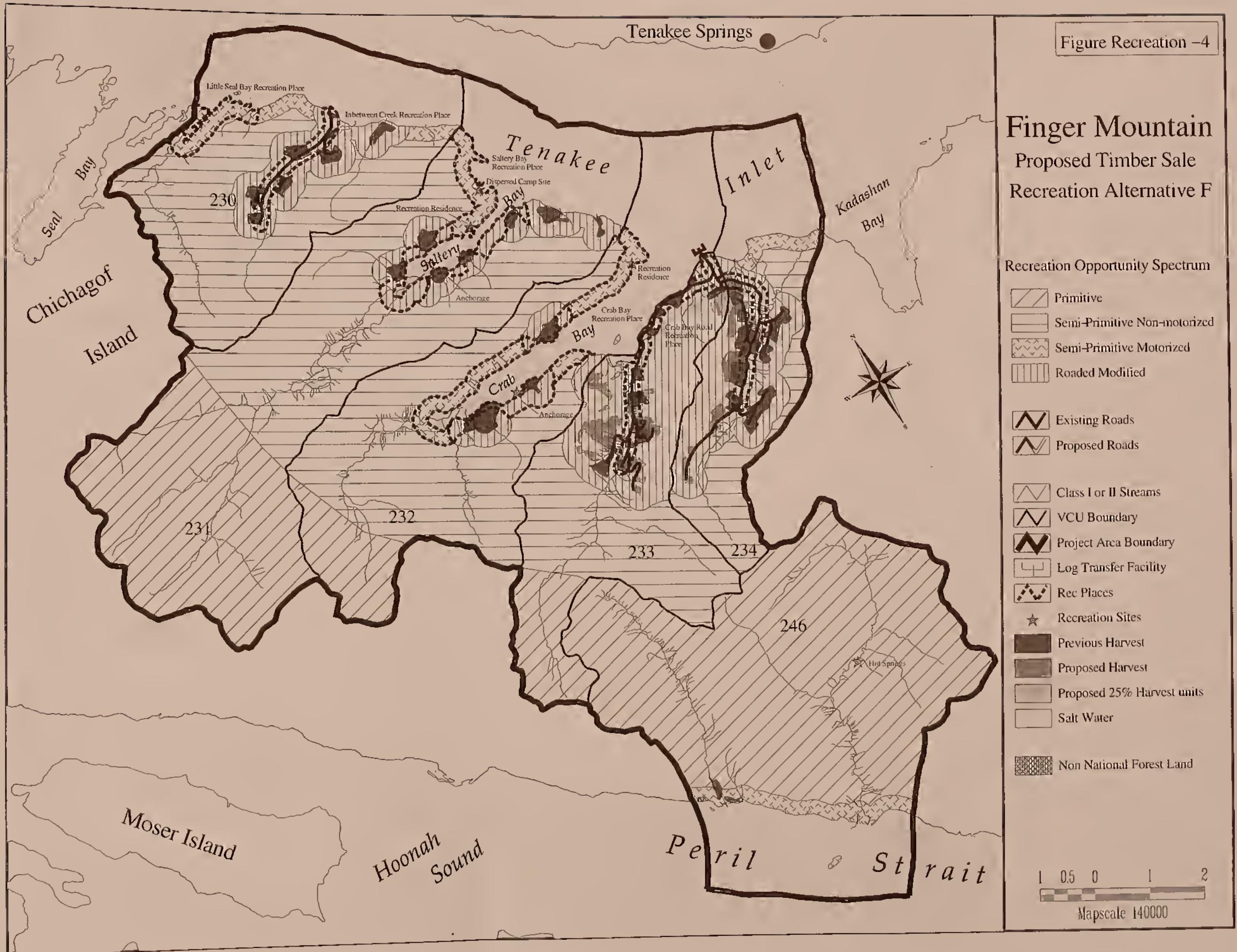


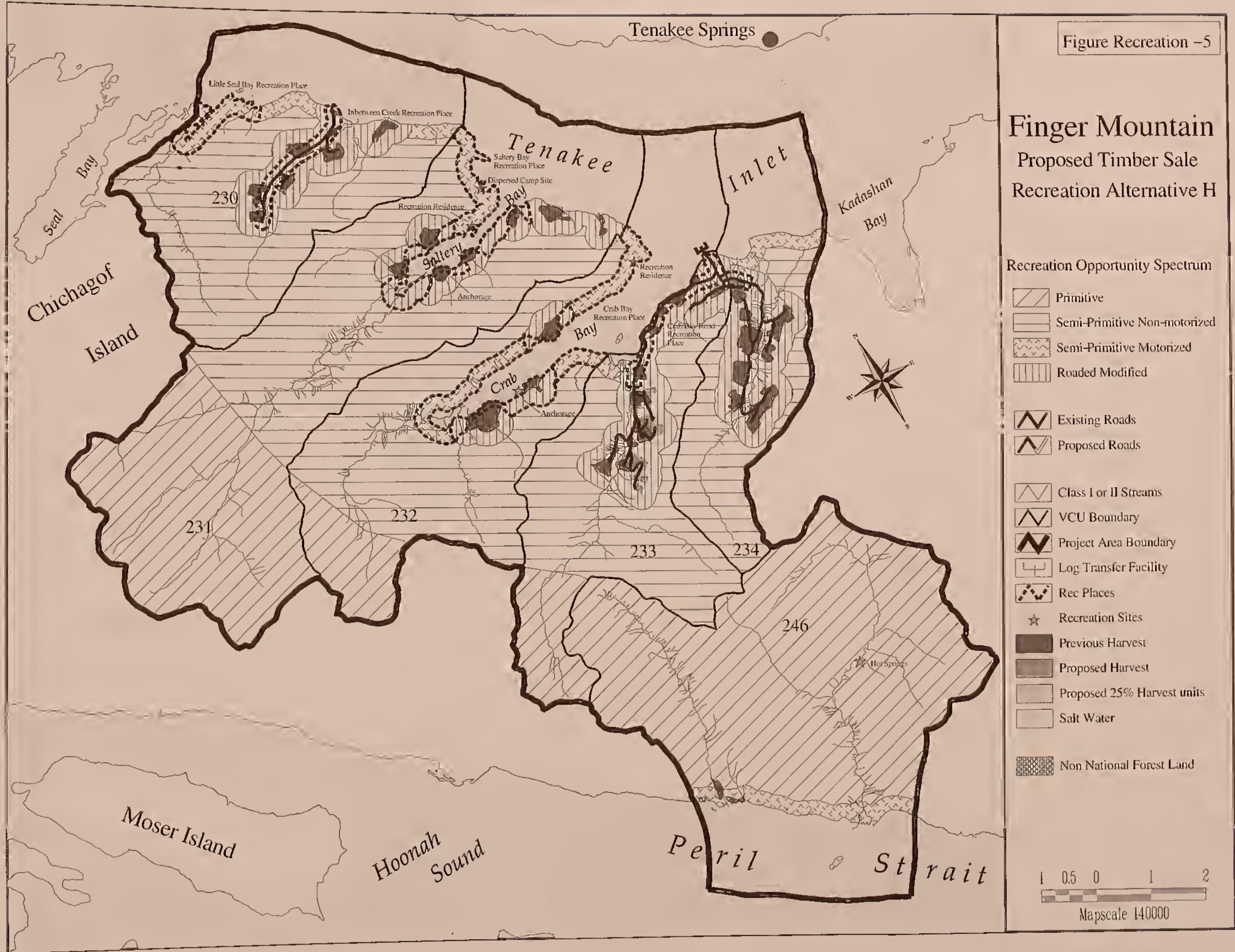


Figure Recreation -5

## Finger Mountain Proposed Timber Sale Recreation Alternative H

### Recreation Opportunity Spectrum

-  Primitive
-  Semi-Primitive Non-motorized
-  Semi-Primitive Motorized
-  Roaded Modified
-  Existing Roads
-  Proposed Roads
-  Class I or II Streams
-  VCU Boundary
-  Project Area Boundary
-  Log Transfer Facility
-  Rec Places
-  Recreation Sites
-  Previous Harvest
-  Proposed Harvest
-  Proposed 25% Harvest units
-  Salt Water
-  Non National Forest Land





**Table 3 - 38**  
**Recreation Opportunity Spectrum (ROS) Acres by Alternative**

	Acres Primitive	Acres Semi-Primitive Non-Motorized	Acres Semi-Primitive Motorized	Acres Roaded Modified	Total Acres <sup>1</sup>
ALT A	28,132 (39%)	32,185 (44%)	3,315 (4%)	9,140 (13%)	72,772 (100%)
ALT B	27,676 (38%)	26,302 (36%)	3,452 (5%)	15,342 (21%)	72,772 (100%)
ALT D	28,131 (39%)	27,852 (38%)	2,964 (4%)	13,825 (19%)	72,772 (100%)
ALT F	28,131 (39%)	29,098 (40%)	3,181 (4%)	12,362 (17%)	72,772 (100%)
ALT H	28,131 (39%)	31,696 (43%)	3,316 (5%)	9,629 (13%)	72,772 (100%)

Source: Nelson 1999.

<sup>1</sup>Does not include 8 acres of private land.

### Recreation Places and Recreation Sites

Recreation Places are inventoried areas having physical characteristics that are particularly attractive to people engaging in recreation activities. Examples of these are beaches, streamside or roadside areas, trail corridors, or hunting areas surrounding a lake, cabin site, or campground. Four Recreation Places totaling 3,827 acres are located within the project area. The main road system in the Inbetween Creek drainage (VCU 230) is included in this number, since the current road management objective (RMO) for this road is to accept recreation traffic. Some roads in the South Crab Bay and Fog Creek VCUs (233 and 234) are also Recreation Places, since recreationists can easily access them from saltwater.

Recreation Sites are specific sites or facilities within a Recreation Place. Table 3-39 and Figure Rec-1 display the Recreation Places and Recreation Sites in the project area. Table 3-39 also lists activities that currently occur in these areas. Table 3-40 and Figures Rec-2 through Rec-5 display the effects of the action alternatives on the Recreation Places and Recreation Sites, as discussed below.

#### Little Seal Bay

The Little Seal Bay Recreation Place is located in the northwestern corner of VCU 230 on the shores of Tenakee Inlet. Recreation features include an estuary, small saltwater islands, protected beaches, and abundant wildlife. A large river flows into the Recreation Place from a long, narrow estuary, winding southwest for 2.5 miles into a steep mountain drainage and ending at two alpine lakes. It is categorized as a Semi-primitive motorized area.

In Alternative D, the Little Seal Recreation Place would become about 14 percent smaller due to timber harvest and road construction in the nearby Inbetween drainage. Acreage removed from the Little Seal Bay Recreation Place would become Roaded Modified and would provide a more developed type of recreation experience.

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## **Inbetween Creek**

Timber harvest occurred in the Inbetween drainage in 1986. A LTF was located on Tenakee Inlet, and the logging operation extended into the valley for 2.5 miles. As stated above, the Forest Service currently manages the road to accept motorized recreation use, which is why the road corridor is a Recreation Place.

In Alternative B, the proposed Road Management Objective (RMO) for the Inbetween roads would be to accept motorized recreational use on a larger portion of the road system, thereby enlarging the existing Recreation Place.

## **Saltery Bay**

Saltery Bay is 1.75 miles long and a half-mile wide. A large estuary extends 2.5 miles back into the drainage. The north shore has a dispersed campsite and deep anchorage. This Recreation Place, located in the northwest corner of VCU 231, includes scenic, rocky beaches, grassy areas used for dispersed camping, and abundant sources of fresh water. Little Saltery Bay, also located within this Recreation Place, provides a protective anchorage for small boat users.

None of the action alternatives would harvest timber in this area. The Recreation Place would not be affected.

## **Crab Bay**

Crab Bay is 5 miles long, approximately 0.75 miles wide, and is surrounded by steep mountains. The Crab Bay Recreation Place includes two VCUs and two saltwater estuaries:

In VCU 232, five major streams form a large estuary at the head of Crab Bay. Recreation features in the area such as a small cove, rocky beaches, grassy flats, fresh water, an anchorage for larger boats, and a Forest Service cabin make the area suitable for dispersed or developed camping. Parts of the Recreation Place in this VCU are classified as Semi-primitive Motorized.

Key features in VCU 233 include an estuary, wildlife (such as bears and seals), sandy beaches, grassy areas, a former logging campsite, and an existing road system accessible from saltwater. Because of past harvest activity in the area, much of the Recreation Place in this VCU is classified as Roaded Modified.

In Alternative F, the Crab Bay Semi-Primitive Motorized Recreation Place would become smaller, due to timber harvest and road construction that would change recreation opportunities in the area from a more primitive to a more developed experience.

The size of the Crab Bay Roaded Modified Recreation Place would increase in Alternatives B, F, and H, due to proposed Road Management Objectives (RMOs) that include accepting recreational use on a larger portion of the Crab Bay road system.

**Table 3 - 39**  
**Existing Recreation Places, Activities, and Site Inventories<sup>1</sup>**

Recreation Places Acreage ROS Class	Activities	Sites	
Little Seal Bay 394 Acres Semi-Primitive Motorized	Waterfowl Hunting Big Game Hunting Stream Fishing Hiking Viewing Scenery	Kayaking Viewing Wildlife Boating Viewing from Marine Access Nature Study	None
Inbetween Creek 442 Acres Roaded Modified	Viewing Scenery Viewing Wildlife Power Boat Use Viewing From Marine Access	Big Game Hunting Tour Boats Flightseeing Saltwater Fishing	None
Saltery Bay 1,032 Acres Semi-Primitive Motorized (452 ac.); Roaded Modified (580 ac.)	Viewing Scenery Viewing Wildlife Power Boat Use Viewing From Marine Access Kayaking Dispersed Camping Picnicking Big Game Hunting Nature Study	Gathering Forest Products Boating Saltwater Fishing Stream Fishing Waterfowl Hunting Hiking Tour Boats	Dispersed Campsites Recreation Residence Anchorage
Crab Bay 1,959 Acres Semi-Primitive Motorized (1,030 ac.); Roaded Modified (929 ac.)	Waterfowl Hunting Boating Flightseeing Powerboat Use Viewing Wildlife Stream Fishing Big Game Hunting Tour Boats Hiking	Dispersed Camping ATV Use Viewing Scenery Viewing from Marine Access Kayaking Saltwater Fishing Nature Study Gathering Forest Products	Recreation Residence Anchorage

Source: Nelson 1999.

<sup>1</sup>Refer to Figure Rec-1.

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Table 3 - 40

Changes to the Recreation Experience and Acreage by Recreation Place Due to Proposed Road Management Objectives (RMOs)<sup>1</sup>

Recreation Places	ALT A (No-Action)	ALT B	ALT D	ALT F	ALT H
Little Seal ROS: Acreage	Semi-Primitive Motorized: 394 acres	No change	Semi-Primitive Motorized: 341 acres	No change	No change
Inbetween Cr. ROS: Acreage	Roaded Modified: 442 acres	Roaded Modified: 839 acres	No change	No change	No change
Salter Bay ROS: Acreage	Semi-Primitive Motorized: 452 acres Roaed Modified: 580 acres	No change	No change	No change	No change
Crab Bay ROS: Acreage	Semi-Primitive Motorized: 1,030 acres Roaed Modified: 929 acres	Semi-Primitive Motorized: 1,030 acres Roaed Modified: 1,811 acres	No change	Semi-Primitive Motorized: 869 acres Roaed Modified: 1,576 acres	Semi-Primitive Motorized: 869 acres Roaed Modified: 1,576 acres
Total	Semi-Primitive Motorized: 1,876 acres Roaed Modified: 1,951 acres	Semi-Primitive Motorized: 1,876 acres Roaed Modified: 3,230 acres	Semi-Primitive Motorized: 1,823 acres Roaed Modified: 1,951 acres	Semi-Primitive Motorized: 1,715 acres Roaed Modified: 2,598 acres	Semi-Primitive Motorized: 1,715 acres Roaed Modified: 2,598 acres

Source: Nelson 1999.

<sup>1</sup>Refer to Figures Rec-1 through Rec-5.

## Recreation Use

The recreation opportunities in the Finger Mountain project area attract both personal and commercial use. Since the northern portion of the project area is within the home range of Tenakee Springs, the town's 105 residents are the primary personal users of these resources.

### Personal Use

The following list identifies the types of personal activities and resources the residents of Tenakee Springs engage in or use in the project area and surrounding saltwater bays.

- wildlife viewing,
- subsistence and sport hunting,
- trapping,
- shellfish gathering (crab, scallops, shrimp, clams, cockles),
- berry picking (huckleberry, blueberry, cranberry, thimbleberry),
- natural foods gathering (mushrooms, goose tongue, berries),
- picnicking,
- saltwater fishing (snapper, halibut, chinook, coho, and pink salmon),
- camping,
- recreational boating (kayaks, skiffs),
- viewing scenic resource from the bays, Tenakee Inlet and Tenakee Springs,
- learning from sites of archaeological and/or historical interest,
- fostering a sense of place (absorbing beauty, experiencing privacy or isolation, connecting with the natural world, getting away from human activity),
- gathering forest products for art production (wood carving, shells),
- whale watching, and
- beachcombing

For many people, part of the recreational experience of engaging in these activities is being in the quiet and remote beauty of the surrounding environment. From this perspective, all of these recreation uses would be indirectly affected by the action alternatives. Alternative B would have the greatest impact. This alternative harvests the most timber volume and would activate two LTFs for an average of five years. Alternative H would have the least impact, since it would harvest the smallest amount of timber volume and would activate only one LTF.

In all action alternatives, Crab Bay LTF operations would disrupt personal recreation use of the entire Crab Bay area during timber harvesting. Also, noise from harvest activities could affect personal recreation use around the Little Seal Bay area in Alternatives B and D. Once harvesting is completed, pre-harvest recreation use of the area would quickly reestablish in these areas. Personal recreation use would not be interrupted in Saltery Bay, or the Broad Creek and Broad Finger Creek drainages.

In terms of direct impacts to these activities, wildlife viewing, scenic viewing, and feeling a sense of place would be adversely affected. Some people may be temporarily displaced from specific sites such as LTFs. Refer to the other resource sections in this chapter for more on the direct effects to these resources and to the Recreation Resource Inventory and Effects Analysis for detailed use information from personal interviews.

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## Commercial Recreation Use

### Tenakee Springs Businesses

The community of Tenakee Springs has been developing its tourist trade for years. The community considers its tourism trade an integral part of its economic base. Prohibition of personal ownership of automobiles, community set hours for the use of the natural hot-springs pool, and continuous dedication to staying an isolated community are unique attributes of the community (T. Garvey, 9/96; pers. comm.). The people of Tenakee Springs emphasize their uniqueness when advertising for tourism because they feel the unusual sells well and generates more economic dollars to stabilize their community (T. Harry, B. Scanlon, 4/96; J. McBean, 7/96; pers. comm.). Members focus on the remoteness of the community to provide a peaceful, wildlands experience. Recreation activities emphasized in advertising are soaking in the hot springs, walking, fishing charters, wildlife viewing, kayaking, mountain biking and hunting.

Three private fishing guides live in Tenakee Springs. Two of them were interviewed by the Forest Service Recreation Planner (T. Harry, 4/96; J. McBean, 7/96, pers. comm.). In 1995, they served 230 to 270 tourists, with 99 percent being from other states or countries, primarily Europe and Japan. One guide family operates a fishing lodge for four months of the year from Tenakee Springs and ferries clients to the fishing grounds each day. The other guide operates for five months and accommodates people on his boat. In 1995, the combined group days for both guides ranged from 153 to 192 days spent in Tenakee Inlet. (All day use numbers in this portion of the recreation section are generated from groups/day and not people/day.)

The co-owners of the Tenakee Springs Mercantile, a complex that includes a grocery store, fuel dock and six cabins, housed 880 people in their cabins in 1995 (B. Scanlon, 4/96 pers. comm.). This user group is primarily from Juneau and is made up of people taking a long weekend or going deer hunting in the fall. Group days generated by the Tenakee Springs Mercantile ranged from 587 to 1,172 days in Tenakee Springs and the Inlet.

The Tenakee Springs harbormaster reported 48 pleasure boats, averaging two people per boat, using the harbor in July and August in 1995 (S. Wilson, 7/96; pers. comm.). A two-night stay was the average during these months, adding 96 days of tourism use to Tenakee Springs.

Of the four action alternatives, Alternative D would have more of an impact on the Tenakee Springs commercial use of areas adjacent to the project area than Alternatives B and F, due to the scenic impacts. In this alternative, two LTFs (Crab Bay and Inbetween) would be activated on the coastline, and the largest number of harvest units would be seen from the community and the Inlet. Alternative F and Alternative H would have the least impact because only one LTF (Crab Bay) would be activated and the fewest number of harvest units would be seen from Tenakee Springs and the Inlet. In all alternatives, the visual impacts would lose their stark contrasts with the surrounding forest within five years of completion, reducing the visual impact to Tenakee Springs and Tenakee Inlet commercial uses adjacent to the project area. (Refer to Analysis of Commercial Recreation/Tourism Use Income section. See the Scenery section in this chapter for more detail on scenic impacts.)

## Small Cruise Ships and Yachts in Tenakee Inlet

Four small cruise companies have been seen using Tenakee Inlet (pers. comm. von Rekowski 1999). These companies have ten ships with an average passenger capacity of 80. The focus for the majority of these tours is education and natural history. An example of use is a ship that averages 0.5 to 1 day of use in the Inlet, 4 to 8 times a year (T. O'Brien, 7/96; pers. comm.). This equates to 2 to 4 days of use, but includes 280 to 560 people each year.

People renting yachts to tour Southeast Alaska also use Tenakee Inlet. The boats usually carry 10 to 15 people and stay a day in the Inlet. From June to August, the Inlet averages two yachts a week. One of the two yachts usually stops to purchase fuel in Tenakee (B. Scanlon, 4/96; pers. comm.)

Alternative D would have the greatest visual impact to the small cruise ships and yachts. This would be caused by having two active LTFs and the greatest number of harvest units visible from Tenakee Inlet. Alternative F and Alternative H would have the fewest visual impacts, since it would only use one LTF and would harvest the least number of units visible from the Inlet. These impacts would all be relatively short-term effects that would occur during sale operations; recovery would occur within several years following completion of the sales. (Refer to the Scenery section for a discussion of recovery rates from harvest.)

## Outfitters and Guides

Table 3-41 displays the number of use days and the recreation/tourism dollars generated in 1997 by Forest Service permitted guides in Tenakee Inlet and Peril Straits.

**Table 3 - 41**  
**Outfitter and Guide Days of Use and Recreation/Tourism Dollars Generated in 1997 in the Finger Mountain Project Area**

	No. of Guides	No. of Clients	Days of Use <sup>1</sup>	Recreation & Tourism Dollars
Big Game	4	11	34	\$27,200/yr
Fishing	2	23	62	\$21,700/yr
Sightseeing	2	14	73	\$18,250 to \$21,900/yr
Total	8	48	169	\$67,150 to 70,800/yr

Source: Nelson 1999 (Sitka Forest Supervisor's Office 1997 Report Summaries for Outfitter/Guides (USDA 1998).

<sup>1</sup>Number of group days by clients.

This portion of the analysis addresses only the guides reporting use within the project area. Alternatives B, D, F, and H would all have an impact on the outfitter and guide business because the Crab Bay LTF would be activated in all these alternatives.

Crab Bay would probably not be used for outfitter and guiding during active harvesting. Existing use equates to one fishing guide reporting 18 days of use and one sightseeing guide reporting 63 days of use (number of group days x clients) in 1997. This decrease in use could cause a reduction ranging from \$22,050 to \$25,200 in recreation/tourism dollars from the project area (assuming the guide does not take clients to another location). This reduction in recreation/tourism dollars would probably only occur during harvest operations and would reestablish quickly after harvesting is completed.

This decrease does not necessarily mean there would be an overall decrease in recreation/tourism dollars for Tenakee Inlet. Some of the displaced guides would probably move to new areas within the Inlet and continue to generate recreation/tourism dollars. However, this could cause a

# 3 Environment and Effects

domino effect in which guides normally using the Finger Mountain project area displace other Tenakee Inlet guides, resulting in a decline of recreation/tourism dollars.

Alternative H would have the fewest impacts to the outfitter and guide business in the project area. The duration of the sale activities would likely be the shortest due to the harvest of the smallest volume. It would also have the least amount of visual impacts. These potential impacts would be short-term effects, lasting for the duration of the timber sales or ceasing within five years of completion of the sales (see discussion in Scenery section).

Alternative B would have the greatest disturbance and time impacts. This alternative proposes the highest level of volume harvested and the use of two LTFs for an estimated five years each. Alternative D would have the highest visual impacts. These visual impacts would decrease within five years of the completion of harvesting due to natural regeneration of the harvest units.

## **Analysis of Commercial Recreation/Tourism Use Income Summary**

Tenakee Inlet and the community of Tenakee Springs are locations used to generate recreation/tourism dollars. We completed an economic recreation/tourism analysis in March 1999.

**Table 3 - 42**  
**Commercial Recreation/Tourism Use and Income Summary for Tenakee Inlet and**  
**Tenakee Springs**

	Tenakee Springs	Tenakee Inlet	Total
Range of total recreation/tourism dollars generated	\$589,910 to \$749,506/year	\$161,978 to \$259,522/year	\$751,888 to \$1,009,028/year
Range of numbers of people willing to pay for recreation/tourism experience	1,436 to 1,484/year	655 to 1,136/year	2,091 to 2,620/year
Range of days of use by groups generating dollars	1,120 to 1,950/year	85 to 91/year	1,205 to 2,041/year

Source: Nelson 1999.

Alternative H would have the least impact to recreation/tourism dollars being generated from Tenakee Springs and Tenakee Inlet because it includes the least amount of harvested volume, one LTF, and would have the least visual impact. Alternative B would have the highest volume to be removed, would activate two LTFs, and would have some visual impacts. Alternative D would activate two LTFs and have the greatest visual impacts.

The community of Tenakee Springs could experience a loss of recreation/tourism dollars during harvesting possibly because of noise and visual impacts near the Crab Bay entrance and Fog Creek. The noise impact would not exist after the sale was completed, and the scenic impact on the view from Tenakee Springs would be reduced considerably after five years. If there was a loss of recreation/tourism dollars, the community would probably progressively, then fully recover the yearly loss of income within ten years from the start of the project.

## Cumulative Effects

The greatest impact to the Tenakee Springs and Tenakee Inlet personal and commercial (including outfitter and guides) recreation uses would be if the proposed Indian River timber sale and the Finger Mountain Timber Sale(s) (Alternative B, D, F, and H) were implemented at the same time. The possibility exists that the Finger Mountain Timber Sale(s) could be implemented at the same time as three other sales (Indian River, Eight Fathom Bight, and False Island) are being harvested within a radius of 20 miles. The cumulative effects on the Primitive and Semi-primitive Non-motorized experience would decline. The Roaded Modified opportunities would increase once the harvesting is completed. However, no reduction in subsistence or sport deer hunting is expected if the proposed Indian River timber sale and the Finger Mountain Timber Sale(s) were to be implemented during the same time period. The possibility of a reduction in hunting activities exists if the area experiences severe winter conditions with or without this proposed project. For further information, see the Subsistence section in this chapter.

When considering the cumulative visual impacts from Tenakee Springs and Tenakee Inlet, the greatest impact would be if the Indian River and Finger Mountain Timber Sale(s) were implemented at the same time. Depending on the alternative selected, three LTFs (Crab Bay, Inbetween, and Sunny Cove) could be active on the Inlet at once, combined with the potential visual effects of the harvest units in the Finger Mountain project. No harvest units in the Indian River sale would be visible from the Inlet. The Inbetween LTF would be dismantled and rehabilitated upon completion of harvesting. The Sunny Cove LTF will be managed by the City of Tenakee Springs and may or may not be removed.

Implementing both of these timber sales during the same period would also have impacts on the proposed trails along the rivers at Seal Bay, Long Bay or Goose Bay by creating competition between local users and residents of the floating logging camp.

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## Heritage

### History

Heritage Resources on the Tongass National Forest include a diverse range of prehistoric and historic sites and artifacts that spans approximately 10,000 years of human occupation and resource use. Although few archeological sites in Southeast Alaska have been systematically investigated, the pace of study is increasing, and our understanding of regional prehistory is expanding. Prehistoric remains on the Tongass include campsites, village sites, graves, resource areas, rock art, portages, and rock shelters.

Although the exact date of occupation is not known, the Tlingit were well established in Southeast Alaska by the time of first Russian contact. The Finger Mountain project area is within the general area traditionally claimed by the Angoon Tlingit. Sitka and Hoonah Tlingit are said to have used portions of the project area as well (Goldschmidt and Haas, 1946).

The historic period in Southeast Alaska begins in July 1741 with Vitus Bering's second Kamchatka Expedition, the first European voyage to touch Southeast Alaska. The era of early maritime fur trade under the Russian-American Company and the subsequent fishing, mining, timber, and tourism industries that flourished following the transfer of Alaska to the United States had a strong effect on the Tlingit and on the landscape. Historic sites include village sites, burials, houses, cabins, mines, trails, portages, canneries, boat works, shipwrecks, and military installations.

### Inventory Efforts

Since 1974, archeologists have conducted numerous surveys within the project area as part of past projects. A heritage resource inventory was conducted during 1993 in advance of the Southeast Chichagof Timber Sale proposed under the Alaska Pulp Long-Term Contract. Forest Service archeologists reviewed all proposed roads, units, and LTFs in the "high probability" zone. The surveys also included inventory of an additional 25 percent sample of all project area acreage falling within the high probability zone. All totaled, archeologists surveyed 5,130 acres of shoreline, 897 acres of proposed cutting units, one proposed LTF, and 19.13 miles of road. In addition, 47.61 miles of existing road and four LTFs were monitored.

Because the acres proposed for treatment under the Finger Mountain Timber Sale(s) project are a subset of the acres considered under the Southeast Chichagof Timber Sale project, additional inventory in the Finger Mountain project area was not necessary. However, during 1996 and 1997, archeologists inventoried 3,115 high probability acres, one proposed harvest unit, 4.5 miles of road (both new and existing), and four LTFs. Following this fieldwork, archeologists compiled a report entitled "A Heritage Resource Review of the Southeast Chichagof Landscape Analysis Area and the Finger Mountain Timber Sale." This report provides a detailed literature review including discussions of the current prehistoric and historic chronologies for Southeast Alaska, presents compiled information regarding the ethnohistory of Southeast Chichagof Island, and summarizes the results of all heritage resource inventories completed to date within the project area.

### Heritage Resources

There are fourteen known heritage resources within the Finger Mountain project area (Table 3-43). Five are prehistoric, seven are historic, and two cannot be clearly categorized due to the lack of datable material.

Of the five prehistoric sites in the project area, four are subsistence campsites or seasonal villages and one is a petroglyph. Of the seven historic sites, one is a saltery, two are cabins, one is a garden, one is a village, one is a burial site, and the last is a fur farm. Two of the sites cannot, with certainty, be distinguished as either prehistoric or historic. One is a large rock cairn and

rock wall located in the sub-alpine and the other is a rock alignment of unknown origin on a tidal flat.

All of these sites have been well documented and mapped, but none has been studied in detail. We do know from results of radiocarbon tests on samples collected in shovel tests that one of the prehistoric sites was occupied 2,770 ( $\pm 70$ ) years before present and another was inhabited 1,440 ( $\pm 90$ ) years before present ("before present," for purposes of radiocarbon dating, refers to the time prior to the year 1950). The prehistoric sites hold the key to understanding the distant past of the project area. Eleven of the sites are on lands administered by the Forest Service, two are on State of Alaska lands, and one belongs to Sealaska Corporation.

Of the fourteen sites in the project area, seven have been determined eligible for inclusion in the National Register of Historic Places, six have been determined not to be eligible, and one has not been evaluated. Those sites listed as eligible qualify because they each retain sufficient integrity and because they may be likely to yield information important in the prehistory or history of Southeast Alaska.

**Table 3 - 43**  
**Description of Archeological Sites in the Project Area**

AHRS Site No.	Land Owner	Site Type	Age	Period	Eligibility <sup>1</sup>
49 SIT 030	USFS	Burial Site		Historic	No
49 SIT 094	State of AK	Petroglyph		Prehistoric	Yes
49 SIT 095	USFS	Cabin	1953-1962 (Closed SUPC)	Historic	No
49 SIT 147	Sealaska Corp.	Village	1700-1900 (ANCSA 1979)	Historic	Not Evaluated
49 SIT 347	USFS	Campsite	1949-1956 (Closed SUPC)	Prehistoric	Yes
49 SIT 348	USFS	Saltery	1934-1937 (Closed SUPC)	Historic	Yes
49 SIT 349	USFS	Cabin		Historic	No
49 SIT 350	State of AK	Rock Alignment		Unknown	No
49 SIT 520	USFS	Village	1440 90 (Beta 97689)	Prehistoric	Yes
49 SIT 532	USFS	Gardens	1926, 1946, 1966 (3 Tree Cores)	Historic	No
49 SIT 540	USFS	Fur Farm	1924-1936 (Closed SUPC)	Historic	No
49 SIT 543	USFS	Rock Cairn		Unknown	Yes
49 SIT 545	USFS	Campsite		Prehistoric	Yes
49 SIT 546	USFS	Campsite	2730 80 (Beta 114727)	Prehistoric	Yes

<sup>1</sup> Eligibility for inclusion in the National Register of Historic Places.

Source: Myron 1998.

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## Culturally Modified Trees

Since 1993, archeologists have documented 114 trees that have been altered by people in the apparent distant past (culturally modified trees or CMTs) within the project area. Culturally modified trees were not recorded as sites, as they are not generally eligible for listing in the National Register. Formal determinations of effect are only rendered for sites eligible for listing. However, the identified culturally modified trees are not likely to be affected by the proposed project because most of the trees are located along the shoreline and project activities generally take place at higher elevations.

## Effects and Monitoring

We anticipate no direct or indirect effects to heritage resources from any of the activities described in any of the action alternatives for the Finger Mountain project. This determination was made as per the requirements of the National Historic Preservation Act (NHPA) as discussed above and based on the provision that archeologists will monitor a sample of all areas of actual ground disturbance. Our programmatic agreement with the SHPO requires post-activity monitoring of ground disturbance in both high and low sensitivity areas.

## Harvest Units

During surveys conducted in 1993 for the Southeast Chichagof timber sale(s) and from 1996 to 1997 for this proposed sale, no archeological sites were identified directly within harvest units. All harvest units lie above 100 feet in elevation, which is outside the high sensitivity zone for heritage sites (USDA 1993). All sites within the area are located along the shoreline. Therefore, there will be no direct impacts to known heritage resources within the project area.

## Roads

During surveys conducted in 1993 for the Southeast Chichagof timber sale and in 1996 and 1997 for this proposed sale, no archeological sites were identified within proposed road corridors in any of the alternatives. Most of the proposed roads lie above 100 feet in elevation, which is outside the area likely to contain heritage sites, and those that lie within the high probability zone were fully inventoried. Heritage monitoring is required during the construction of new roads and reconstruction of existing roads.

## Log Transfer Facilities

No archeological sites were identified directly within areas designated for LTFs or sort yards. Both LTFs and sort yards are located within the high sensitivity zone likely to contain heritage resources and both would be established at former LTF locations. These locations and adjacent lands were carefully surveyed as part of the pre-project review for heritage resources. Heritage monitoring is required during construction and reconstruction of both proposed LTFs (Inbetween and Crab Bay).

## Camps

A floating camp is proposed for Crab Bay. There are no anticipated effects to any sites from this camp.

## Cumulative Effects

Cumulative effects on heritage resources occur through natural erosion and weathering, as well as from continued development near lands containing heritage sites. The bulk of the project area encompasses territory traditionally used and claimed by the Angoon Tlingit. The Sitka Tlingit have used the lands on the Peril Strait side of the project area (Goldschmit and Haas 1946). While project activity cannot have an effect on past historic events, continued federal management activities can have a long-range, cumulative impact on places of importance to the Tlingit.

## Legal Requirements

In 1966 Congress established policy on historic preservation in the form of the National Historic Preservation Act (16 U.S.C. 470). In the opening section of the Act, Congress declared “the historical and cultural foundations of the Nation should be preserved as a living part of our community life and development in order to give a sense of orientation to the American people.” The same Act, its later amendments, and a number of other acts and implementing regulations provide the framework for the current national historic preservation program. In keeping with this legislation, the Tongass National Forest Heritage Resource program seeks to identify, evaluate, preserve, and protect significant heritage resources on a Forest-wide and project-specific basis.

Heritage resource specialists on the Tongass National Forest review all proposed projects on the Forest in compliance with Section 106 of the National Historic Preservation Act and as per guidelines established in a Programmatic Agreement among the Forest Service, Alaska Region, the Advisory Council on Historic Preservation, and the Alaska State Historic Preservation Officer (USDA 1995). As part of the required Section 106 Review, all identified sites are evaluated against standard criteria for inclusion on the National Register established in 36 CFR 60.4. If a site is determined to be eligible, a formal determination of effect must also be completed.

A complete survey report (Bower and West 1993) and formal Determinations of Eligibility and Effect for the Southeast Chichagof timber sale(s) were submitted to the State Historic Preservation Officer in 1993. In consultation with both the State Historic Preservation Officer and the Advisory Council on Historic Preservation, a final Determination of No Effect for all eligible sites was reached for the planned sale on April 22, 1993 (Advisory Council on Historic Preservation, April 1993).

As the alternatives were developed for the Finger Mountain Timber Sale(s), archeologists worked directly with project planners to ensure that all planned roads, harvest units, and LTFs would be located at sufficient distance from heritage resources to have no direct or indirect effects on them. A complete literature review and survey report (Myron, Muenster, and Willman 1999) and formal Determinations of Eligibility and a Determination of Effect for Eligible Sites were submitted to the State Historic Preservation Officer in September 1999. Concurrence on the Determination of No Effect was reaffirmed in 2000. Table 3-43 displays the eligibility of each site for inclusion in the National Register of Historic Places.

Tribal consultations are an important part of heritage resource management. Tribal governments were provided opportunities to comment during the analysis phase. No cultural resource concerns were identified during tribal contacts. However, tribal entities will be given additional opportunities to identify culturally important or sensitive areas. Tribal government consultation will continue with ongoing consultation during the project implementation and monitoring phases.

A discovery or disturbance of human remains during this project is not expected. However, if human remains are inadvertently discovered, they will be treated according to the conditions of the Native American Grave Protection and Repatriation Act (NAGPRA), and tribal entities will immediately be notified.

Implementation of any of the alternatives would not violate the American Indian Religious Freedom Act of 1978, which prohibits denying American Indians access to traditional religious sites. No traditional religious sites were identified during tribal consultation.

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## Subsistence

The following discussion and analysis are based on the detailed subsistence information and analysis contained in the 1997 Forest Plan FEIS, Chapter 3 (sections on Subsistence and Communities), Appendix H, and the Deer Harvest Map in the map packet. See also the Management Indicator Species and Endemic Terrestrial Mammals section of this chapter for additional analysis of deer and other wildlife species. The Alaska Department of Fish and Game, Division of Subsistence, also provided an analysis based on a model for ranking subsistence sensitivity to disturbance for VCUs throughout the Southeast Alaska region (Turek 1999). Federal management of subsistence resources other than fish began on July 1, 1990. Federal management of fish resources in navigable streams began on October 1, 1999.

### Subsistence and ANILCA

Subsistence is a broad term applied to many natural resource uses of rural Alaskans. In the Alaska National Interest Lands Conservation Act (ANILCA), subsistence is defined, in part, as “the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation” (ANILCA, Sec. 803). ANILCA provides for the continuation of these uses “consistent with sound management principles, and the conservation of healthy populations of fish and wildlife” (ANILCA, Sec. 802). For many rural Alaskans, subsistence is a way of life; for many it also carries cultural and religious meaning. The identification, protection, and interpretation of cultural and historic resources on federal lands are covered under other legislation, including the National Historic Preservation Act (see the Heritage section of this chapter).

The analysis of subsistence uses and resources on National Forest land and of potential effects resulting from management activities is also required by ANILCA (Sec. 810). This analysis typically focuses on food-related resources, which are the ones more likely to be affected due to loss or alteration of habitats from land-altering activities. Three factors are assessed to determine whether subsistence uses within the project area or portions thereof may be significantly restricted by the proposed actions: abundance and distribution of the resources, access to resources, and competition for the use of resources. The Alaska Land Use Council defines a significant restriction on subsistence uses in the following way:

...a proposed action shall be considered to significantly restrict subsistence uses if, after any modification warranted by consideration of alternatives, conditions, or stipulations, it can be expected to result in a substantial reduction in the opportunity to continue uses of renewable resources. Reductions in the opportunity to continue subsistence uses generally are caused by: reductions in abundance of, or major redistribution of resources; substantial interference with access; or major increases in the use of those resources by non-rural residents.

Under ANILCA, if it is concluded that land management activities (from a specific project or cumulatively for a geographic area) may impose a significant possibility of a significant restriction on subsistence resources or uses, additional analysis and findings are required. Such a finding requires that the proposed action 1) be modified to remove the significant restriction, 2) be dropped, or 3) proceed with the stipulation that formal subsistence hearings be held and subsequent findings published.

## Subsistence Resources and Uses

The Federal subsistence law states that only rural Alaska residents qualify for subsistence hunting and fishing on Federal Lands. In Southeast Alaska, all communities except Juneau and Ketchikan are designated as rural communities under ANILCA. Rural communities with documented subsistence uses of the Finger Mountain Project Area portion of Chichagof Island are Angoon, Elfin Cove, Haines, Pelican, Petersburg, Skagway, Sitka, and Tenakee Springs.

A public ANILCA 810 Subsistence Hearing was held in Tenakee Springs on May 15, 2003. The purpose of the hearing was for subsistence users to provide testimony about subsistence issues in the Finger Mountain Project Area.

Salmon and other finfish, shellfish, marine plants and mammals, terrestrial wildlife including deer and other mammals, as well as berries, cedar bark, and timber are all subsistence resources harvested by rural communities in Southeast Alaska. The Forest Plan FEIS states that the resources most commonly used by residents of Tenakee Springs include Chinook salmon, halibut, rockfish, deer, seal, Dungeness crab, and berries (1997, p. 3-656). The principal subsistence wildlife resources of the project area are deer and smaller furbearers, such as marten. With the exception of deer, use of wildlife species for subsistence purposes is relatively minor. Forest-wide, measured by weight, deer account for 21 percent of subsistence food resources; all other land mammals account for 4 percent (Forest Plan FEIS 1997, p. 3-224).

During the 810 Subsistence Hearing held in Tenakee Springs (May 15, 2003), the residents voiced concern primarily about the effects of the proposed project on subsistence uses of deer, waterfowl, crabs, clams, shrimp, fish, indigenous plants (i.e., berries, beach asparagus, angelica) and the continued availability of other forest resources (particularly cedar) for their uses. Another issue was the effects of the proposed road in the watershed that drains into Little Seal Bay.

## Effects on Subsistence Use

The 1997 Forest Plan provides a comprehensive analysis of subsistence resources and potential effects, both Tongass-wide and for each rural community of Southeast Alaska. The 1997 Forest Plan FEIS determined that no significant decline in salmon, other finfish, or invertebrate habitat capability was expected from the implementation of the proposed alternative (p. 3-658). It also concluded that, Forest-wide, under full implementation of the 1997 Forest Plan (including riparian, beach, and estuary buffers as well as the old-growth conservation strategy), the only subsistence resource that may, in the future, be significantly restricted is deer (Forest Plan FEIS 1997, pp. 3-224 to 3-229; Forest Plan ROD 1997, pp. 36 to 37). Although the plan recognizes that with full implementation of the Forest Plan there could be some risk to fish habitat, it was determined that deer, due to their association with old-growth forest habitat, become the indicator for potential subsistence resource consequences concerning the abundance and distribution of the resources (Forest Plan FEIS 1997, p. 3-224). Therefore, this analysis focuses on the impacts of the proposed project on the abundance and distribution of, access to, and competition for deer.

Subsistence use of deer is documented for the rural communities of Southeast Alaska in the 1997 Forest Plan (see Forest Plan FEIS 1997, pp. 3-210 to 3-223 and 3-523 to 3-528). Community use of specific geographic areas for obtaining deer is estimated by Wildlife Analysis Area (WAA) boundaries that were developed by the State of Alaska. An estimated 39 percent of the Finger Mountain project area is in WAA 3309, and 61 percent is in WAA 3629. Estimates of community use of specific WAAs for harvesting deer are reported in Appendix H of the 1997 Forest Plan. Sitka, Juneau, Ketchikan, and Petersburg are the communities that use WAA 3309. None of these communities uses this WAA to obtain 75 percent of their average annual reported deer harvest. Juneau, Sitka, Angoon, Tenakee Springs, and the community groupings of Elfin Cove, Pelican, Haines, and Skagway are the main users of WAA 3629. As described in the 1997 Forest Plan (pp. H-70, H-90, H-91, and H-95), Haines, Skagway, Tenakee Springs, and Yakutat obtain 75 percent of the community's deer harvest from WAA 3629. Residents of Haines harvest

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an average of seven deer per year from WAA 3629 (3.7 percent of their total deer harvest). Skagway residents harvest an average of one deer per year from WAA 3629 (7.1 percent of their total deer harvest). Residents of Tenakee Springs harvest an average of 23 deer per year from WAA 3629 (31.9 percent of their total deer harvest). Yakutat residents harvest an average of one deer per year from WAA 3629 (10 percent of their total deer harvest). The discussion of potential effects on the subsistence use of deer in the project area will thus focus on Tenakee Springs since it is the only community to harvest a substantial portion of subsistence deer in WAA 3629 and because that harvest makes up a substantial portion of that community's historic deer use. All future demand projections are extrapolations based on current use and population growth.

ADF&G completed an analysis ranking VCUs' sensitivity to disturbance for communities (Turek 1999). ADF&G identified VCUs 230, 233, and 234 as having very high sensitivity to disturbance for the community of Tenakee Springs. ADF&G also rated VCUs 233 and 234 high for sensitivity to disturbance for the communities of Hoonah and Haines. These VCUs are also used to a lesser extent for subsistence activities by the communities of Skagway, Petersburg, and Sitka.

The Finger Mountain DEIS determined that the proposed project would not directly or indirectly impose a significant possibility of a significant restriction on subsistence resources or uses. However, the Forest Plan FEIS states that, cumulatively, implementation of the Forest Plan may result in timber sale activities that may impose a significant possibility of a significant restriction on subsistence resources or uses. Therefore, an ANILCA 810 Subsistence Hearing was held to address subsistence issues in the project area. This analysis is based on the assessment in the Forest Plan FEIS, public comments, and the testimony received at the subsistence hearing.

## Abundance and Distribution

Information on the distribution and abundance of deer in the project area is based primarily on the interagency deer habitat model that estimates habitat capability based on changes to winter deer habitat resulting from timber management activities. Model results and the impacts of timber harvest in deer habitat are described in detail under the discussion of Management Indicator Species in this chapter. Declines in deer habitat capability are measurable and will occur under all action alternatives in areas where timber is harvested.

The existing deer habitat capability for the Finger Mountain project area is 97 percent of the estimated capability for the year 1956. Taking into consideration previous timber harvest, the model estimates that the implementation of the action alternatives will result in a 3 to 5 percent reduction of habitat capability for the project area, with Alternatives B and D having the greatest reduction in habitat capability. These declines represent a cumulative trend that has occurred and will continue to occur with the harvest of POG timber. Changes in deer distribution and abundance are expected to reflect loss of habitat from the conversion of POG forest into second-growth stands by timber harvest.

In the first 25-years following even-aged management of timber stands, some units will increase in value as deer habitat by providing a flush of understory forage plants that is expected to be available to deer except under deep snow conditions. In these areas, deer abundance and the distribution of deer may temporarily increase in response to increased food availability. After about 25 to 35 years, even-aged harvested stands will reach the stem exclusion stage as a result of closure of the canopy. The model predicts that at this time, harvested areas will have almost no value as deer winter habitat. Because these stands lack the multi-layered, diverse structure and shrub-herb component that is found in old-growth stands (Deal 2001), deer abundance is likely to decline and distribution will change as deer leave these areas to find higher value habitat. Partial harvest or two-aged silvicultural systems would have less impact on deer abundance and

distribution because canopy structure and understory vegetation will be maintained, and POG habitat will not be reduced (Deal 2001, p. 2076).

Although deer numbers in some areas may increase temporarily in response to increased food availability in harvest units, it is expected that deer abundance will decline in the long-term in proportion to even-age harvest levels. Some of the primary deer winter range would be protected by the implementation of the 1997 Forest Plan standards and guidelines that include a 1,000-foot beach and estuary fringe no-harvest zone along all saltwater beaches and estuaries, the application of riparian buffers along all streams, and the location of a small OGR in each VCU (major watershed). Declines in deer winter habitat, the most important habitat component in the project area, can be minimized in several ways. For example, during the planning process for this project, units proposed for harvest in action alternatives were selected and designed to preserve important wildlife habitats and the integrity of old-growth habitat and to maintain POG habitat and connectivity. Harvest activities are only proposed to occur within WAA 3629; therefore, there will be no change in the availability of deer habitat in WAA 3309. Alternatives B and D would result in a 2 percent reduction of high-value deer habitat in WAA 3629 from the existing level. Alternatives F and H would reduce deer habitat by 1 percent. POG habitat would be reduced by between 1 and 3 percent as a result of proposed action alternatives. Of the 61 percent (33,962 acres) of the forested habitat within the project area (55,731 acres) that is in POG, 18 percent (6226 acres) is in OGR (Refer to Chapter 3, Biodiversity and Old-growth) and is unavailable for harvest. Although there would be a reduction in deer habitat, results of deer pellet surveys conducted jointly by ADF&G and the Forest Service suggest that deer numbers on Chichagof Island and in the vicinity of the Finger Mountain project area have remained stable since surveys began in 1981 (Kirchoff and White 2002). In addition, the Forest Plan designated the Kadashan and Trap Bay Watersheds as legislated LUD II areas and the area south of Seal Bay as Old-growth Reserve Habitat because of their high subsistence use value for Tenakee Springs residents (Forest Plan FEIS 1997, pp. 3-658 and 3-659).

## Access

Activities are proposed to occur in WAA 3629, an important hunting area for Tenakee. The area is accessible by boat and float plane and, although some ATV use occurs, most hunting is done on foot. Logging roads currently access the uplands from LTFs only in WAA 3629 (VCUs 230, 233, and 234). Additional access to WAA 3629 (VCUs 230 - 234) from constructed LTFs and roads would occur depending on the alternative selected.

Project-related activities are not expected to restrict access to deer subsistence use. There are currently 17.7 miles of existing roads in the project area. These roads are generally single-track trails that have been overgrown by alder and are inaccessible to cars or trucks. All of the action alternatives propose to increase access in the project area by constructing new National Forest system roads and temporary roads and by reconstructing existing roads. Roads increase opportunities for subsistence hunters by allowing motorized and foot access to areas that have been relatively inaccessible. Increases in hunting opportunities are likely to result in increases in levels of deer harvest. Within the project area, Alternative B would result in the largest increase in total open road access followed by Alternatives F, D, and H (refer to the sub-section in the Management Indicator Species and Endemic Terrestrial Mammals section of Chapter 3 titled "Effects of Roads on Marten" for detailed information on road densities). All action alternatives propose reconstructing existing roads in VCUs 233 and 234 south of Crab Bay. Alternative B proposes an 8-mile increase in access, and Alternative D proposes a 5-mile increase in access in the area South of Seal Bay where the only existing road system lies in Inbetween Creek. Alternatives F and H would only increase road access in VCUs 233 and 234 where existing roads are already concentrated. Due to the project area's location across Tenakee Inlet from the community of Tenakee Springs, access to the area would likely continue to be by small boat. Access by motorized vehicle or ATV is not likely to increase significantly over current use.

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## Competition

Changes in deer abundance resulting from timber harvest and increased access to deer by both rural and non-rural hunters, combined with projected increase in hunter demand for deer, will affect competition for deer between subsistence users. A deer population at carrying capacity should be able to support a hunter harvest (demand) of approximately 10 percent that is sustainable and that provides a reasonably high level of hunter success (Forest Plan FEIS 1997, p. 3-596). Hunter success can be expected to decline in areas where demand represents 10 to 20 percent of habitat capability. If demand exceeds 20 percent of habitat capability, harvest of deer by hunters may be directly or indirectly restricted (Forest Plan FIES 1997, p. 3-537).

Historic amounts of deer harvested and potential direct and cumulative effects of full implementation of the 1997 Forest Plan (as Alternative 11) in conjunction with the anticipated future demands for deer are displayed and discussed for each Southeast Alaska community in Appendix H of the 1997 Forest Plan. Three levels of deer use are evaluated for each community for those areas (WAAs) the community most relies on: use by community residents only, use by all rural (subsistence) hunters, and use by all hunters (including those from non-rural communities and hunters from out of State, neither of whom are considered subsistence users under ANILCA). Under ANILCA, a priority for use will be granted to rural users if restrictions on use of a resource are necessary. If further restrictions on a use were necessary, then that is the point at which a significant restriction on subsistence uses may occur. Such a restriction could occur from either reduced abundance (measured by changes in habitat capability) or increased competition (measured by rural hunter demand).

Only one Southeast Alaska community, Tenakee Springs, relies heavily on subsistence deer harvest in the project area for a portion of its subsistence food needs. The analysis for Tenakee Springs (Forest Plan FEIS 1997, pp. 3-658 to 3-659 and H-91) displays current (historic) use of WAAs 3526, 3629, and 3627, where residents of Tenakee Springs obtain approximately 75 percent of their average annual deer harvest. WAAs 3526 and 3627 are adjacent to the community of Tenakee Springs; WAA 3629 is on the south side of Tenakee Inlet in the Finger Mountain project area. Current average deer harvest (1987 to 1995) in all of these WAAs is 352 deer for all hunters, or 6.8 percent of the 1995 habitat capability. By the year 2005 (assuming full 1997 Forest Plan timber harvest), use by all hunters in these WAAs is projected to be 8.2 percent of habitat capability. This projection is based on a projected decrease in habitat capability and an increase in demand. Thus, for short-term cumulative effects (the Finger Mountain project and all past projects), no restrictions on use by subsistence hunters would occur.

After 100 years of full implementation of the 1997 Forest Plan (long-term cumulative effects), demand by all hunters in these WAAs is projected to reach 16.4 percent of habitat capability. It is possible that by this time (the year 2095) the subsistence priority for deer hunting in these WAAs may be in effect. However, use by all subsistence hunters would still be below the 20 percent threshold discussed above.

## Resource Findings

With the application of the 1997 Forest Plan beach, estuary, and riparian standards and guidelines, no significant adverse effects on fisheries or marine mammal or invertebrate species are anticipated under any alternative (see the Water, Soil, and Fish section of this chapter). There are no anticipated significant adverse effects for wildlife species (excluding deer) because species-specific standards and guidelines for wildlife and small OGR standards and guidelines (part of the 1997 Forest Plan habitat conservation strategy) will be implemented (see the Management Indicator Species and Endemic Terrestrial Mammals section of this chapter). In addition, during the planning process units proposed for harvest in action alternatives were

selected and designed to preserve important fish and wildlife habitats and the integrity of old-growth habitat and to maintain POG habitat and connectivity. This determination for deer is also based on the potential resource effects on the abundance and distribution of deer, access to deer, and competition for deer. The analysis displays that there may be some potential impact to subsistence deer use in the WAAs historically used by residents of Tenakee Springs (WAAs 3526, 3629, and 3627) by the year 2005. This potential for impact to subsistence deer use assumes full 1997 Forest Plan timber harvest. Habitat capability for deer is likely to decrease slightly by that time, while demand for deer is likely to increase. However, subsistence use of deer by all hunters in these WAAs is projected to be less than 10 percent of habitat capability. For these reasons, the action alternatives would not directly, indirectly, or cumulatively present a significant possibility of a significant restriction on subsistence use of any resources in the project area.

The 1997 Forest Plan FEIS included a cumulative effects analysis of resource development on subsistence resources. Based on that analysis, the 1997 Forest Plan ROD concluded that full implementation of the Forest Plan “may result in a significant restriction to subsistence use of deer due to the potential effects of projects on the abundance and distribution of these resources, and on competition for these resources” (Forest Plan ROD 1997, p. 36). It is not possible to substantially reduce timber harvest in one area and concentrate it in other areas without affecting subsistence resources and uses important to one or more rural communities (Forest Plan ROD). For this reason, timber sale activities cannot completely avoid cumulative landscape effects to subsistence uses. Therefore, while this project would not directly or indirectly impose a significant possibility of a significant restriction on subsistence resources or uses of deer, the alternatives would contribute to the cumulative effects on subsistence uses of deer at the forest level. This determination applies to all alternatives, including the no action alternative, and is based on an anticipated increase in human population, an associated increase in subsistence activities, and the capability of the habitat to produce deer.

Section 810 (a)(3) of ANILCA requires that when a use, occupancy, or disposition of public lands may result in a significant possibility of a significant restriction, a determination must be made whether (1) such a restriction is necessary, consistent with sound management principles for the utilization of public lands, (2) the proposed activity involves the minimum amount of public lands necessary to accomplish the purposes of the use, and (3) reasonable steps will be taken to minimize adverse impacts on subsistence uses and resources resulting from the actions.

### **Necessary, Consistent with Sound Management of Public Land**

Alternatives have been examined to determine whether the associated potential restriction to subsistence use is necessary, consistent with the sound management of public lands. In this regard, the laws and direction that have been considered include:

- the National Forest Management Act of 1976 and its implementing regulations;
- the Alaska National Interest Lands Conservation Act (ANILCA) of 1980;
- the 1997 Forest Plan;
- the Tongass Timber Reform Act (TTRA) of 1990;
- the Alaska State Forest Practices Act;
- the Alaska Coastal Management Program;
- the Multiple Use Sustained Yield Act (1960); and
- the USDA-FS Subsistence Management and Use Handbook (FSH 2609.25).

Management activities on National Forest System lands must provide for the multiple-use and sustained yield of renewable forest resources in accordance with the Multiple-Use Sustained Yield Act of 1960. Multiple-use is defined as “the management of all the various renewable surface resources of the National Forest System so that they are utilized in the combination that

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will best meet the needs of the American people (36 CFR 219.3). The alternatives presented in this FEIS represent different ways of managing the resources of the project area in combinations that are intended to meet these needs. Each provides a different mix of resource uses and opportunities, and each has some potential to affect subsistence uses. Given the framework and emphasis of the action alternatives, the possibility of a restriction is necessary, consistent with sound management of public land.

ANILCA Title VIII places an emphasis on the maintenance of subsistence resources and lifestyles. However, the Act also provides for adequate opportunity for satisfaction of the economic and social needs of the State of Alaska and its people and recognizes that public lands are necessary and appropriate for more intensive uses. The Act also requires the Forest Service to make available 4.5 billion board feet per decade from the Tongass National Forest. The TTRA removed the 4.5 billion board foot requirement, but directs the Forest Service to seek to meet market demand for timber to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, and subject to applicable law.

As described in Appendix A of this FEIS, the action alternatives are necessary as a component of the timber management program designed to implement the Forest Plan and to meet TTRA direction. There is currently a market demand for timber, a limited timber supply from other sources, and an under-utilized mill capacity in the region. The volume from the action alternatives is a component of the 10-year timber sale schedule that attempts to provide timber to industry in an even-flow over the planning cycle. The timber volume for this project was also designed to be sold in multiple small sales over a period of several years in order to offer sales for smaller timber operators in the area. The action alternatives can help meet the Forest Plan and TTRA objectives, while also providing reasonable protection measures for forest resources, especially for subsistence. It is consistent with the Forest Plan, laws, regulations, policies, public needs, and the capabilities of the land.

Based on a review of the subsistence hearing testimony and the analysis conducted in the Final EIS, it is apparent that all of the alternatives may involve some potential impact to subsistence deer use in the future. Due to the cumulative effect of past, present and reasonably foreseeable actions, there is no alternative, including the no-action alternative, that would meet Forest Plan and TTRA objectives and yet completely avoid a significant possibility of a subsistence restriction somewhere in the Tongass National Forest.

## **Amount of Land Necessary to Accomplish the Purpose of the Proposed Action**

The amount of public land involved to implement the action alternatives (considering sound multiple-use management of public lands) are the minimum necessary to accomplish the purpose of the action alternatives. Most of the Tongass National Forest is used by one or more rural communities for subsistence deer hunting purposes. It is not possible to lessen timber harvest in one area and concentrate it in another locale without impacting one or more rural communities' important subsistence use areas. In addition, harvestable populations of subsistence wildlife species could not be maintained in a natural distribution across the forest if harvest were concentrated in specific areas. A well-distributed population of species is required by the National Forest Management Act and is one of the objectives of the Forest Plan.

The Forest Plan allocated many of the important subsistence use areas to land use designations that do not allow timber harvest. Other areas that are important to subsistence use were protected through standards and guidelines such as the 1,000-foot beach and estuary buffers and the stream-side Riparian Management Areas that do not allow timber harvest. Of the 72,780 acres of National Forest System lands within the Finger Mountain Project Area, the Forest Plan allocated 16 percent of the area to the non-development LUD of Old-growth Habitat Reserve, which does not allow timber harvest, and 84 percent to development LUDs such as Timber Production,

Modified Landscape, and Scenic Viewshed. These designations provide for resource use and development for commodity resources such as timber. The minimum amount of land and roading was used to resolve resource concerns while meeting the purpose and need for this project in a practical and efficient manner.

The greatest risk to meeting subsistence demand in the future is primarily related to the anticipated human population growth and its associated increase in subsistence hunter demand when compared to the habitat capability to produce deer. This anticipated population growth will happen independently of this proposed project.

Management activities cannot completely avoid all subsistence areas due to their location and broad extent across the Forest. Other areas that could be harvested may be limited by additional resource concerns such as soil and water protection, high-value wildlife habitat, economics, scenic quality, or unfeasible unit and road design. The impact of viable timber harvest projects usually includes the alteration of old-growth habitat, which reduces habitat capability for old-growth associated species.

The Finger Mountain Project involves the minimum amount of public land necessary and strikes a balance between meeting the needs of the public and protecting forest resources. Choosing any alternative (including the no-action alternative) or locating harvest in another location on Chichagof Island would not avoid or substantially lessen the risk to subsistence use in the future.

### **Reasonable Steps to Minimize Adverse Impacts Upon Subsistence Uses and Resources**

The Forest Plan took considerable steps to minimize adverse impacts to subsistence uses and resources. Forest Plan standards and guidelines protect important deer winter habitat. Other reasonable steps taken to minimize adverse impacts to subsistence resources include:

- the overall Forest Plan land use designation strategy;
- the old-growth reserve strategy;
- travel and access management planning;
- Forest Plan standards and guidelines for stream, beach and estuary buffers; and
- the use of silvicultural systems that maintain components of overstory tree canopy, such as two-aged and uneven-aged management with reserve trees.

The Preferred Alternative reflects a reasonable balance between the projected need for timber from the project area to help meet the Forest Plan, ANILCA, and TTRA timber-related objectives, and the continued protection of subsistence uses and resources. Impacts on subsistence have been minimized through the design of individual harvest units and road corridors and through the formulation of the alternatives.

## Social Values and Economics

Southeast Alaska is a unique place to the people who live and work here. As the population and economy of the region continue to grow and change, Southeast Alaska is beginning to mirror national trends. These trends are seen more in larger communities, such as Sitka, with the economy becoming more diverse and less dependent on the manufacturing/wood products sector. Tenakee Springs is also changing, but more slowly. The population of the region has grown over the years, and recent trends indicate a larger population of people 65 years and older staying in, or moving to communities in Southeast Alaska. This is changing the economic structure of communities as retirees bring income into the region, increasing the demand for services and retail goods.

Even with changes to the economy and population, per capita income has been declining, moving closer toward the national average, eroding some of the advantages of living in Southeast Alaska. With the decline in the wood products industry, the high wage employment associated with the industry has also declined. Employment in other sectors, especially retail and services, has increased, but associated wages are not as high as the wood products sector.

Prior to 2000, in states with national forests, 25 percent of the returns to the US Treasury from revenue producing Forest Service activities such as timber sales, were returned to each state for distribution back to counties (or in Alaska, boroughs) having acreage within a national forest. Those payments were called the "25 percent fund payments" and were dedicated by law to roads and schools. In October 2000, the *Secure Rural Schools and Community Self Determination Act of 2000* was enacted to stabilize federal payments to states, in response to declining federal receipts.

For fiscal years 2001 through 2006 under the new legislation, Alaska boroughs and communities have elected to receive a full payment amount rather than 25 percent of receipts. The full payment amount is the average of highest three payments made to the state during the 14 year period between 1986 and 1999. These annual full payment amounts would be primarily dedicated to roads and schools, with provisions for special project funding under certain conditions. Under the full payment approach, Forest Service payments to the State of Alaska during the 2001 to 2006 period would not be linked to annual Forest Service revenue, rather they would be based on the high three year historic average. The difference in revenues among the alternatives considered in the EIS would have no effect on the payments boroughs receive between and 2006.

Economic conditions in Sitka and Tenakee Springs and the possible changes and impacts caused by the project are of interest to people around the region. Even more important, though more difficult to assess, are the potential social impacts to the area. Social issues and values are of great importance to local economies and the quality of life of residents. Visitors to the area are also interested in the condition of and access to forest resources. These values and attitudes are difficult to determine and evaluate in a quantitative analysis. Even using qualitative methods, it is difficult to assess all costs and benefits associated with the project. Within the same community, people will have different opinions concerning positive and negative impacts of a timber sale. These values and concerns are important to consider in the decision making process. The following analysis summarizes the economic and social impacts associated with the Finger Mountain project.

The impact to the commercial fishing and sport fishing industry in the area was not estimated. Much of the impact to salmon occurs in ocean waters, outside the control of the Forest Service. Due to riparian standards and guidelines, estuary and beach fringe protection, and other resource

protection measures, it is unlikely that salmon populations would be significantly impacted by any of the alternatives (refer to the Water, Soil, and Fish section in this EIS and the 1997 Forest Plan FEIS, Part 2 for complete discussion). Sport fishing opportunities would not be significantly impacted, and with roading, may potentially increase (see the Water, Fish, and Soil section).

Costs and revenues associated with commercial tourism in the project area have also not been estimated directly for each alternative. In 1997, outfitter and guides used the area for an estimated 169 days with average revenues of about \$138,000. Tourism and recreation uses throughout the region have been growing yearly and are expected to continue increasing. It is difficult to determine what changes in tourism and recreation opportunities the action alternatives would have. Some types of activities would likely increase, while others decline with the change in recreation opportunities (refer to the Recreation section).

## Social Impact Analysis

Social impact analysis highlights both quantifiable and non-quantifiable effects that have social meanings for people in terms of values, beliefs, traditions, culture and so on. Social impacts that have measurable indicators are summarized into major categories in Table 3-44 to highlight differences between alternatives. Some social impacts that are not quantifiable may be inferred from this table as well, but the table is not intended to cover the full range of impacts that might occur. (See also the paragraph following the table.) Some impacts would be short-term in nature (i.e., 3-5 years) while others would be longer-term (perhaps 50 years or more); these are indicated in the “time frame” column.

Several values that are related specifically to resource uses have been summarized in separate resource reports rather than being further summarized and simplified for this analysis. For complete analyses of scenery, recreation and tourism, subsistence, heritage, wildlife, and fish issues, refer to the individual resource reports located in the Project Record. Most of the impacts included in Table 3-44 are short-term and relate to timber sale activities. The changes to tourism opportunities would be long-term, as it would take decades for the project area to return to current conditions. Passive use effects are also long-term in nature for similar reasons.

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**Table 3 - 44**  
**Social and Economic Summary**

Variable	Time frame <sup>1</sup>	Indicator of change	ALT A	ALT B	ALT D	ALT F	ALT H
Roaded opportunity	Short-term	Miles of system roads <sup>2</sup>	17.7 <sup>3</sup>	23.6	19.7	9.5	6.5
Crab Bay traffic	Short-term	MMBF from Crab Bay LTF	0	12.6	13.0	10.9	4.1
	Short-term	Logging camp locations	none	Floating camp at Crab Bay			
Noise in Tenakee Inlet	Short-term	% of MMBF helicopter logged	0	0	12%	47%	0
Wood product opportunities	Short-term	Potential timber harvest, MMBF <sup>4</sup>	0	21.4	19.8	10.9	4.1
Land-based primitive tourism opportunities	Long-term	% acres in P, SPNM ROS <sup>5</sup>	83%	74%	77%	79%	82%
Land-based road tourism opportunities	Long-term	% acres in SPM, RM ROS <sup>6</sup>	17%	26%	32%	21%	18%
Passive use values not maintained <sup>5</sup>	Long-term	Total acres harvested	0	936	1,036	827	223
	Long-term	Number of VCUs entered	0	3	3	2	2
Unroaded character maintained	Short-term	Estimated acres remaining unroaded	66,860	63,664	63,669	65,091	66,387

Source: Schaefers 1999; Lutz 2003.

<sup>1</sup> Long-term impacts = longer than 50 years. Short-term impacts = between 3 and 5 years.

<sup>2</sup> Miles of system roads include 17.7 miles of existing road and all new and reconstructed miles developed for the sale. It does not indicate the miles to remain open after the sale is completed.

<sup>3</sup> Of the 17.7 miles of existing system road, 2.7 are currently open.

<sup>4</sup> Potential timber harvest includes road right-of-way volume not included in harvest units.

<sup>5</sup> P = Primitive recreation opportunities, SPNM = Semi-primitive non-motorized recreation opportunities, SPM = Semi-primitive motorized recreation opportunities, RM = Roaded modified recreation opportunities. ROS = Recreation Opportunities Spectrum, see Recreation Resource Report for details.

<sup>6</sup> Passive use values also include unroaded character. The road miles shown in row #1 also indicate passive use values not maintained.

## Distribution Analysis

Distribution analysis is not concerned with costs and benefits or with direct values of resources, but with the equity with which resources are distributed. In essence, it is the balancing of local, regional, and national wants, needs, and values. Two distribution analyses have been completed: employment and earnings, and environmental justice.

### Employment and Earnings

Direct wood products employment and earning impacts have been estimated at the regional level. These estimates do not necessarily represent new opportunities in the area. They may be current jobs that could be sustained by the given volume of timber harvest. Also, the jobs and earnings do not necessarily occur in a single year. These figures represent the total employment and earnings opportunities associated with Forest Service timber sale activity.

It is difficult to predict which specific operator will successfully bid for the sale. However, those communities with processing facilities and current employment in the wood products industry are most likely to be directly benefited by this project. Tenakee Springs and Sitka may not benefit directly, but it is possible that some of the indirect employment and income impacts will occur in these communities. Table 3-45 summarizes the potential wood products employment and earnings impacts at the regional level.

**Table 3 - 45**  
**Potential Wood Products Employment and Earnings Impacts by Alternative**

	ALT B	ALT D	ALT F	ALT H
<i>Employment</i>				
Direct employment	140	140	78	33
Total employment	242	242	135	58
<i>Earnings in Millions of 1998 Dollars</i>				
Direct income	6.2	6.2	3.5	1.5
Total income	10.8	10.8	6.0	2.6

Source: NEAT outputs 2002.

Wood products employment and earnings, both direct and indirect, generally increase as the harvest level increases. The alternatives considered for Finger Mountain follow that trend. Alternative B, with the highest volume available, would also provide for the most employment and earnings around the region. The types of jobs would vary with alternative, based on the harvesting methods, amount of road construction, helicopter time, and other factors.

## Environmental Justice

A specific consideration of equity and fairness in resource decision-making is encompassed in the issue of environmental justice and civil rights. As required by law and Title XI, all federal actions will consider potentially disproportionate effects on minority or low-income communities.

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According to the 1990 Census, the median household income of Sitka was \$43,337 and that of Tenakee Springs was \$18,125 (Forest Plan FEIS 1997, page 3-524. All figures in this paragraph are from this same source and page). Five percent of Sitka households and 11 percent of Tenakee Springs households were below the poverty line. In 1990, 21 percent of Sitka residents were Alaska Native, and 10 percent of Tenakee Springs residents were Alaska Native. These native populations would not be disproportionately affected by any alternative. No concerns relating to Environmental Justice were brought up during public or tribal meetings or in public comments on the draft EIS.

## Roadless Areas

### Introduction

Inventoried Roadless Areas (IRA) are undeveloped areas typically exceeding 5,000 acres that met the minimum criteria for Wilderness consideration under the Wilderness Act and that were inventoried during the Forest Service's Roadless Area Review and Evaluation (RARE II) process, subsequent assessments, or forest planning. The Finger Mountain Timber Sale(s) Project falls within the Chichagof Roadless Area #311. The Chichagof Roadless Area #311 is one of 109 IRAs inventoried as part of the 2003 Supplemental Environmental Impact Statement (SEIS) to the Forest Plan. Unloaded areas are any area without the presence of a classified road, of a size and configuration sufficient to protect the inherent characteristics associated with its roadless condition. Unloaded areas do not overlap with IRAs. The analysis that follows for the Finger Mountain project focuses on the effects to the unloaded characteristics on the ground, regardless of whether the area is specifically labeled an IRA.

This Roadless Area analysis is based on the most recent (2003) updates to the Roadless Inventory Map that was used in the 1997 Forest Plan. The inventory was updated to support the SEIS that responded to a US District Court Order to evaluate and consider Roadless Areas within the Tongass National Forest for recommendations as potential Wilderness. The updated inventory includes the most current land ownership information, new developments (e.g., roads, timber harvests, powerlines, etc), and a more refined Roadless Area mapping process to consistently represent unloaded areas across the Forest.

The Finger Mountain project area is surrounded by the Chichagof Roadless Area and Tenakee Inlet. Opportunities for solitude within the area are good; access is limited, and one is not likely to meet another person within the area. Except for the roads in VCUs 230, 233, 234, and the associated previously harvested area, the natural integrity of the landscape character is largely maintained. Recreation potential is high, and subsistence use takes place throughout most of the area and includes hunting, fishing, and gathering.

### Chichagof Roadless Area #311

The Chichagof Roadless Area includes most of the central portion of Chichagof Island. The area is comprised of steep mountainous terrain separated by river valleys and interspersed with muskeg environments. Access is by boat or floatplane. Prehistoric and historic Native cultures and early settlers used this area. The vegetation is typical of Southeast Alaska's coastal temperate rain forest, and the area is home to high populations of Sitka black-tailed deer, black bear, brown bear, and small furbearers. Two communities near but not within the Chichagof Roadless Area are Tenakee Springs (directly across Tenakee Inlet) and Hoonah (located about 10 miles to the northeast, across Port Frederick). Juneau is approximately 45 miles to the east and is served by the Alaska Highway System and daily jet service. A complete description of the Roadless Area can be found in Appendix C of the SEIS for Roadless Area Evaluation for Wilderness Recommendations (USDA Forest Service 2003).

### Size of the Chichagof Roadless Area

About 92% (66,860 acres) of the Finger Mountain project area (72,780 acres) is within the Chichagof IRA #311 (545,420 acres total). Less than eight percent of the project area is currently in a roaded condition (5,920 acres). Most of the roaded area consists of previously harvested areas along Inbetween Creek, Saltery Bay, Crab Bay and Fog Creek. About 85 percent of the project area has been designated as a developmental land use designation (LUD) in the 1997 Forest Plan (See Table 3-46 and Figure Roadless-1).

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Appendix C of the SEIS explains the boundary changes to the Roadless Area that were made in the latest inventory updates. The changes that affect the Finger Mountain project area are where land that was excluded in earlier inventories has now been included as roadless because it was never harvested as projected when the earlier inventories were done.

**Table 3 - 46**  
**Land Use Designations (LUDs) in the Chichagof Inventoried Roadless Area #311 (CIRA) and Other Unroaded Areas**

LUD	Total Acres of CIRA	CIRA Acres in Project Area	Roaded Acres in Project Area	Total Acres in Project Area
<i>Development LUDs</i>				
Timber Production	212,760	53,465	4,135	57,600
Modified Landscape	5,170	1,447	826	2,273
Scenic Viewshed	4,080	1,644	5	1,649
<b>Total Development Acres</b>	<b>222,010</b>	<b>56,556</b>	<b>4,966</b>	<b>61,522</b>
<i>Non-development LUDs</i>				
Old-growth Habitat	45,080	10,295	945	11,249
Other (incl. Private) <sup>2</sup>	278,330	9	9	9
<b>Total Non-development Acres</b>	<b>323,410</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total Acres</b>	<b>545,420</b>	<b>66,860</b>	<b>5,920</b>	<b>72,780</b>

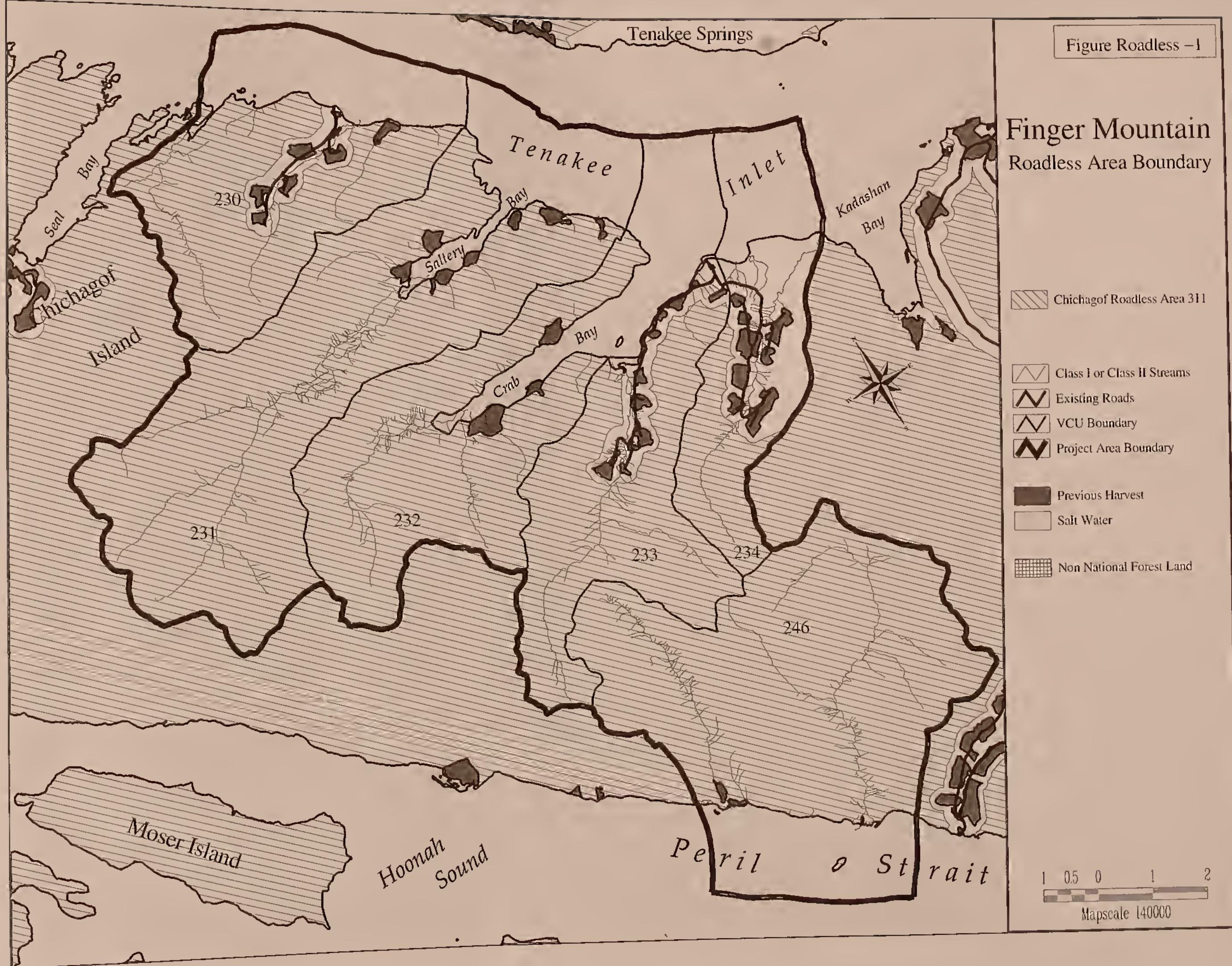
<sup>1</sup>GIS SEIS Roadless Coverage "L"; Lutz, 2003.

<sup>2</sup>Includes LUD II, Research Natural Area, Wild & Scenic River, and Semi-remote Recreation LUDs.

## Forest Plan Analysis

During the most recent Forest-wide evaluation of the roaded areas for Wilderness recommendations (USDA 2003), the Chichagof Roadless Area was again not recommended for inclusion in the National Wilderness Preservation System because management of over half (59%) of the area will retain the unroaded characteristics in non-development LUDs. The 12,000 acres (2%) estimated to actually be suitable for timber production are needed to respond to multiple needs including ensuring a healthy forest habitat and providing a sustainable supply of goods and services, including timber. Full details of this analysis can be found in the Final Supplemental Environmental Impact Statement (SEIS), especially in Appendix C, Part 2 (pages C2-1 to C2-21) and the 2003 ROD. Forest-wide, 90 percent of all currently unroaded lands on the Tongass National Forest (about 84% of the total Forest acres) will still be roadless at the time of the next Forest Plan revision (Forest Plan FEIS 1997, 3-170). This is a conservative estimate because it assumes roadless acres become roaded in the same proportion as in the past, which has actually been less than projected in recent years.

Figure Roadless -1





### Nearby Roadless and Wilderness Areas and Uses

The West Chichagof-Yakobi Wilderness borders the Chichagof Roadless Area to southwest. The Admiralty Island National Monument-Kootznoowoo Wilderness is located approximately 9 miles east across Chatham Strait from the area. The Pleasant-Lemesurier-Inian Island Wilderness is located approximately one mile north of the area at its closest point. Roadless Areas within the immediate vicinity are Hoonah Sound (#328) (across Hoonah Sound to the west), North Baranof (#330) (across Peril Strait to the south), Point Craven (#314) (to the southeast and separated by roads and harvest units), Trap Bay (#312) (to the east and separated by roads and harvest units), Tenakee Ridge (#321) (to the north and east across Tenakee Inlet), and Game Creek (#323) (to the east across Port Frederick).

### Solitude and Pristine Nature

The Chichagof Roadless Area has been modified throughout the years by human influence; however, considering the vastness of the area, the effects have been insignificant. Most of the change has been along the shoreline areas and many of the human occupancy sites are deteriorated and have been overgrown by the forest. The area adjacent to Crab Bay was logged from the beach in the mid-1950s, while the southern drainages of Crab Cove were developed in 1977 and are outside the Roadless Area. In 1968, Saltery Bay was beach logged and Seal Bay tractor logged. The Inbetween Timber Sale, harvested in 1983, was located on the headland between these two bays. This sale area is also outside the Roadless Area. There is also evidence of beach logging in the portion of the area that borders Peril Strait. Timber harvest activities in this area are apparent from Tenakee Inlet. The area has an overall natural appearance when viewed from most locations along Hoonah Sound.

The 1996 ROD for the Eight Fathom Timber Sale(s) (USDA Forest Service, 1996) proposed additional developments within this Roadless Area. The 10-year Action Plan for the Tongass National Forest identifies one existing and four future timber sales as part of the Eight Fathom Timber Sale(s) EIS. The existing sale is the Humpback/Gallagher Timber Sale, which is outside the boundaries of the Chichagof Roadless Area. The four proposed sales are expected to take place in 2003 (two projects), 2005, and 2006, and range in size from 2.3 to 9.2 million board feet (MMBF). The two projects proposed for 2002 are expected to involve the harvest of 7.4 to 9.4 and 4.3 to 5.3 MMBF of timber within the Roadless Area. The Action Plan also includes a future potential timber sale project of about 20 MMBF in the Corner Bay and False Island planning areas and an addition 15 MMBF in the Broad Creek planning area.

### Affected Environment

This area is located within the East Chichagof Island Biogeographic Province. This province has a dryer and colder climate than the outer coast of Chichagof Island and the winter snow pack is generally greater. Chichagof Island is deeply dissected into three peninsulas that may be functioning biologically more like separate islands. Vegetation in this province represents a modal condition similar to Admiralty Island Province.

In general, shallow soils with good drainage tend to develop on steeper slopes. Deep, well-drained soils commonly occur on gentler slopes where transported soil materials have collected. Deep organic soils (muskegs) tend to develop where drainage is poor. There are many creeks, rivers, lakes, bays and fiords in the area. Much of the shoreline is rocky and difficult to access. Air quality is excellent; it gets washed almost daily.

None of the VCUs in the Finger Mountain portion of the Chichagof Roadless Area is considered primary salmon or sportfish producers (Tongass Fish and Wildlife Resource Assessment, ADF&G 1998). The streams running into Seal Bay are considered high producing pink salmon streams, and the three streams running into Crab Bay are noted for their coho salmon producing

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ability. Seal, Saltery, and Crab Bays are good examples of high quality brown bear habitat. Marbled murrelets, peregrine falcons, trumpeter swans, goshawks and bald eagles are also found in the area. Sitka black-tailed deer and marten are also important game and furbearer species found in the area. An important habitat corridor was identified between the Broad Finger drainage and Crab Bay (Shephard and others 1999).

The only federally listed threatened or endangered species in the area are humpback whales and Steller sea lions. Both are found in adjacent marine waters. Two Alaska Region sensitive species, trumpeter swans and goshawks are also found in the area. More information on these species can be found in the Threatened, Endangered, Proposed, Petitioned, and Sensitive Species section of Chapter 3.

There are approximately 333,380 acres mapped as forest land, of which 180,630 acres (54 percent) are mapped as POG forest. Of the POG, 65,480 acres (36 percent) are mapped as high volume old-growth forest. There are 1,190 acres of second growth forest where beach harvest has occurred in the past.

Recreation uses in the Finger Mountain portion of the Chichagof Roadless Area include hunting, fishing, boating, kayaking, viewing scenery and wildlife, hiking, gathering forest products, and nature study. Tenakee Springs residents are the primary personal users. Commercial use also comes from Tenakee Springs businesses as well as small cruise ships and yachts. Again, a thorough analysis can be found in Recreation section of Chapter 3 of this EIS.

At the time of Euroamerican contact, the Hoonah and Angoon Tlingit used this area of Chichagof Island. Villages and sites for seasonal hunting, fishing, and collecting activities were located throughout the Chichagof Roadless Area. Salteries were established at Idaho Inlet in 1884 and at Basket and Saltery Bays in the early 1900s.

Subsistence species include salmon, trout (both fresh and saltwater), deer, and marten. Tenakee Springs is the primary community of use. ADF&G has identified VCUs 230, 233, and 234 as having a very high sensitivity to disturbance. Refer to the Subsistence section of Chapter 3 of this EIS for more information

The area within the Finger Mountain project does not contain any reference landscapes, although within the entire Chichagof Roadless Area several areas of scientific interest have been identified. Refer to Appendix C in the Final SEIS for additional information

## **Direct and Indirect Effects on the Chichagof Inventoried Roadless Area**

Under Alternative A, there would be no change to the unroaded character of the project area. None of the alternatives would affect the roadless character of the 545,420-acre Chichagof Roadless Area.

Timber harvest activities have occurred in the Finger Mountain project area since the 1950s. These harvested areas are identified on the map for Alternative A. As noted above, the Finger Mountain project area includes areas that were not inventoried as roadless because they had been approved for timber harvest at the time of the Roadless Area Inventory. These areas were not developed as anticipated and remain essentially roadless.

All of the action alternatives propose harvest and road construction or reconstruction in areas that are roadless. Each drainage in which harvest is proposed has had previous harvest activities. Alternative B would affect about 3,196 acres, Alternative D about 3,191 acres, Alternative F about 1,769 acres, and Alternative H about 473 acres. Alternatives B and D propose timber harvest and road construction and road reconstruction in VCUs 230, 233, and 234. Alternative F

builds no new roads but would reconstruct roads and harvest timber in VCUs 233 and 234. Of the action alternatives, Alternative H would have the least effect on the roadless characteristics of the unroaded portion of the project area because the fewest roadless acres would be harvested. None of the action alternatives would affect the roadless character or Wilderness potential within VCUs 231, 232, or 246 where no activities are proposed at this time.

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**Measure of Effect by Alternative<sup>1</sup>**

	ALT A	ALT B	ALT D	ALT F	ALT H
Harvest unit acres within Roadless Area	0	708	686	527	102
% of Roadless Area affected by units including 600 ft buffer	0%	4.8%	4.8%	2.6%	0.7%
Harvest unit acres plus areas within 600 ft of harvest units	0	3,196	3,191	1,769	473
Size of Roadless Area remaining within Project Area (in acres) <sup>2</sup>	66,860	63,664	63,669	65,091	66,387
Miles of new classified road within Roadless Area includes temporary	0	15.3	8.3	2.1	1.3
Miles of classified road in Roadless Area after harvest	0	8.5	4.5	0	0

<sup>1</sup>Chichagof Roadless Area 311 and other unroaded areas.

<sup>2</sup>Excluding areas within 600 feet of a harvested unit and 1200 feet of any road.

## Cumulative Effects

Cumulative effects on Roadless Areas were analyzed at the Forest Plan level. The decision was made to allocate the IRAs to either development or non-development land use designations. During the analysis for the 1997 Forest Plan, the values of the Roadless Areas, the location, and the proximity to other Roadless Areas, especially Congressionally designated Wilderness Areas, were used to determine which Roadless Areas would be allocated for development. This analysis was updated during 2003 the Roadless Area evaluation supplement to the 1997 Forest Plan, and the multiple land use designations assigned to this area were affirmed.

All portions of the IRAs on Chichagof Island that are affected by the proposed Finger Mountain Timber Sale(s) Project are in development LUDs. All of the proposed management activities are consistent with the 1997 Forest Plan LUDs. The following management activities adjacent to the Finger Mountain Project Area have been scheduled in the Forest's 10 Year Plan: False Island, Corner Bay, and Broad Creek timber sale projects. Analysis for the False Island Timber Sale(s) Project began with the publication of a Notice of Intent in the summer of 2002. The False Island project may affect a Roadless Area less than 5000 acres. None of the projects would affect any areas identified under the Roadless Rule.

All of the action alternatives limit activity to previously managed VCUs. No additional timber harvest or road construction is planned or expected to occur within the project area in the near future, and, since the area is surrounded by the Chichagof Roadless Area and Tenakee Inlet, no cumulative effects on its unroaded character are anticipated. None of the action alternatives will affect the eligibility of any of the IRAs for inclusion in the National Wilderness Preservation

# 3 Environment and Effects

System because all activities would occur in areas that have had previous timber harvest and road building. Furthermore, nearly 60% of the largely pristine portion if the Chichagof Area remains in non-developmental LUDs and will be eligible for Wilderness in the future.

## Roadless Area Conservation Rule & Roads Policy

In the last few years, there has been heightened national interest in the conservation of roadless areas. Currently the Roadless Area Conservation Rule (Roadless Rule, January 12, 2001) is in effect and is the subject of a number of lawsuits. The Department of Agriculture and the Department of Justice have entered into an agreement with the state of Alaska (signed 6/10/03) settling the state's lawsuit challenging the applicability of the roadless rule in Alaska. The Department of Agriculture committed to publishing for comment a proposed amendment to the Roadless Rule that excludes the Tongass National Forest. Publication of this proposed amendment is scheduled for the end of June 2003 and includes a public comment period. The Department made no representation regarding the content or substance of any final amendment to the Roadless Rule that may result.

The Tongass National Forest contains approximately 16.8 million acres, of which about 6.6 million acres are Congressionally designated Wilderness, National Monument, and LUD II (Congressionally designated Roadless Area) lands occurring throughout the Forest. The 110 IRAs in the 1996 inventory covered about 9.4 million acres, including the LUD II lands. The 109 IRAs in the 2003 inventory cover about 9.7 million acres.

The Finger Mountain project meets the transition criteria included in the Roadless Rule, which allows projects on the Tongass National Forest to continue if the Notice of Availability for the Draft Environmental Impact Statement was published in the Federal Register prior to January 12, 2001. A Notice of Availability for the Finger Mountain Timber Sale(s) Draft Environmental Impact Statement was issued in January 2000.

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# Chapter 4

## Lists

### Glossary

#### Common Abbreviations

<b>ACMP</b>	Alaska Coastal Management Program
<b>ADEC</b>	Alaska Department of Environmental Conservation
<b>ADF&amp;G</b>	Alaska Department of Fish and Game
<b>ANCSA</b>	Alaska Native Claims Settlement Act of 1971
<b>ANILCA</b>	Alaska National Interest Lands Conservation Act of 1980
<b>ASQ</b>	Allowable Sale Quantity
<b>BMP</b>	Best Management Practice
<b>CCF</b>	One hundred cubic board feet
<b>CEQ</b>	Council on Environmental Quality
<b>CFR</b>	Code of Federal Regulations
<b>CZMA</b>	Coastal Zone Management Act of 1976
<b>DBH</b>	Diameter at breast height
<b>DEIS</b>	Draft Environmental Impact Statement
<b>EIS</b>	Environmental Impact Statement
<b>EPA</b>	Environmental Protection Agency
<b>EVC</b>	Existing Visual Condition
<b>FEIS</b>	Final Environmental Impact Statement
<b>Forest Plan</b>	1997 Tongass Land and Resource Management Plan
<b>FSH</b>	Forest Service Handbook
<b>GIS</b>	Geographic Information System
<b>IDT</b>	Interdisciplinary Team
<b>LTF</b>	Log Transfer Facility
<b>LUD</b>	Land Use Designation
<b>LWD</b>	Large Woody Debris
<b>MBF</b>	One thousand board feet
<b>MMBF</b>	One million board feet
<b>MIS</b>	Management Indicator Species
<b>MOU</b>	Memorandum of Understanding
<b>NEPA</b>	National Environmental Policy Act of 1969 (as amended)
<b>NFMA</b>	National Forest Management Act
<b>NMFS</b>	National Marine Fisheries Service
<b>NOI</b>	Notice of Intent
<b>OGR</b>	Old-growth Reserves
<b>PFL</b>	Productive Forest Land
<b>RM</b>	Roaded Modified
<b>RMA</b>	Riparian Management Area
<b>RMO</b>	Road Management Objectives
<b>ROD</b>	Record of Decision
<b>ROS</b>	Recreation Opportunity Spectrum
<b>SHPO</b>	State Historic Preservation Officer
<b>SPM</b>	Semi-Primitive Motorized
<b>SPNM</b>	Semi-Primitive Non-Motorized
<b>SRD</b>	Sitka Ranger District
<b>SSA</b>	Sediment Source Area
<b>TLMP</b>	1979 Tongass Land Management Plan
<b>TTRA</b>	Tongass Timber Reform Act
<b>USDA</b>	United States Department of Agriculture

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<b>USDI</b>	United States Department of the Interior
<b>USFWS</b>	United States Fish and Wildlife Service
<b>VCU</b>	Value Comparison Unit
<b>VMC</b>	Visual Management Class
<b>VQL</b>	Visual Quality Level
<b>VQO</b>	Visual Quality Objective
<b>WAA</b>	Wildlife Analysis Area

## Definitions

### **Abiotic**

Describes the non-living components of an ecosystem (e.g., air, rocks, soil particles)

### **Adfluvial Fish**

Species or populations of fish that do not go to sea, but live in lakes or ponds, and travel to streams to spawn.

### **Alaska National Interest Lands Conservation Act (ANILCA)**

Passed by Congress in 1980, Public Law 96-487, 96th Congress, 94 Stat. 2371-2551

### **Alaska Native Claims Settlement Act (ANCSA)**

Approved December 18, 1971. Provides for the settlement of certain land claims of Alaska Natives and for other purposes, Public Law 92-203, 92nd Congress, 85 Stat. 688-716.

### **Allowable Sale Quantity (ASQ)**

The maximum quantity of timber that may be sold each decade from suitable lands covered by the Forest Plan (1997 Forest Plan).

### **Alluvial Fan**

A cone shaped deposit of organic and mineral material made by a stream where it runs out from a narrow valley (or V-notch) onto a plain or meets a slower stream.

### **Alpine**

Parts of mountains usually above tree growth, but may include pockets of commercial timber.

### **Amenity Values**

Resources that are pleasing to the mind or senses. Amenity uses or values cannot be easily measured in dollars. Recreation and scenic quality are examples of amenity values.

### **Anadromous Fish**

Fish that spend part of their lives in fresh water and part of their lives in salt water.

Anadromous fish include pink, chum, coho, sockeye, and king salmon, and steelhead trout. There are also anadromous Dolly Varden char.

### **Background**

The distant part of a landscape; the seen, or viewed area located from three or five miles to infinity from the viewer. (See Foreground and Middleground.)

### **Bark deposition**

The settling out and accumulation of bark in the water commonly referred to as a bark layer, measured in inches or centimeters. Usually associated with log transfer facilities.

### **Bark Dispersion**

The process of bark being scattered from the point of entry into the water and accumulation by the action of sea currents and tide fluctuations.

**Beach Fringe**

The area inland from salt-water shorelines, which is typically forested.

**Best Management Practice (BMP)**

Land management methods, measures, or practices selected by an agency to meet its non-point source pollution control needs. BMPs include, but are not limited to, structural and nonstructural controls and operation and maintenance procedures. BMPs can be applied before, during, and after pollution producing activities to reduce or eliminate the introduction of pollutants into waters. BMPs are selected based on site-specific conditions that reflect natural background conditions and political, social, economic, and technical feasibility. BMPs are found in Forest Service Handbook 2509.22.

**Biodiversity**

(Also referred to as **Biological Diversity**.) The variety of life forms and processes, including the complexity of species, communities, gene pools, and ecological functions, within the area covered by a land management plan.

**Biomass**

The total quantity, in a given time, of living organisms of one or more species per unit area or all of the species in a community.

**Biotic**

Used to describe components of an ecosystem that are alive (e.g., plants and animals).

**Board Foot**

Timber measurement equal to the amount of wood in an unfinished 12-inch by 12-inch by 1-inch board.

**Bog**

Wetlands where sphagnum moss growth has separated the peat surface from ground water (e.g., domed bog). They receive their mineral supply solely from rain and snow.

**Buffer**

An area of undisturbed or lightly disturbed forest set aside to isolate activity areas from sensitive areas.

**Cave**

Defined under federal law as “any naturally occurring void, cavity, recess, or system of interconnected passages which occurs beneath the surface of the earth or within a cliff or ledge and which is large enough to permit an individual to enter, whether or not the entrance is naturally formed or human-made. Such term shall include any natural pit, sinkhole or other feature which is an extension of the surface,” (Federal Cave Resource Protection Act of 1988).

**Characteristic Landscape**

The natural landscape within an area being viewed.

**Clearcut with Reserves**

See Regeneration Methods.

**Cohorts**

In fisheries management, a group of fish from a given area that are the same age class and species.

**Commercial Fishery**

The taking or possession of fish, shellfish, or other fishery resources within a designated area for commercial purposes.

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## **Commodity Values**

Resources that have a dollar or market value. Timber and minerals are examples of commodity values.

## **Composition**

The specific elements of an entity, for example, the species that constitute a plant community.

## **Conveyance**

The passing of the title of a property from one owner to another.

## **Cretaceous**

Geologic time period 135 million to 63 million years ago

## **Cruise**

The general activity of determining timber volume and quality.

## **Cubic Board Foot**

Timber measurement equal to a cube of wood with 1-foot sides.

## **Cumulative Effects**

See Effects.

## **Direct Employment**

Jobs that are immediately associated with a given activity, for example in logging, sawmills, and pulp mills.

## **Distance Zones**

Areas of landscapes denoted by specified distances from the observer (See Foreground, Middleground, and Background). Used as a frame of reference in which to discuss landscape characteristics of management activities.

## **Ecological Approach**

Natural resource planning and management activities that assure consideration of the relationship between all organisms (including humans) and their environment.

## **Ecosystem**

A complete, interacting system of organisms considered together with their environment (e.g., a marsh, a watershed, or a lake).

## **Ecosystem Management**

Using an ecological approach to land management to sustain diverse, healthy and productive ecosystems. Ecosystem management is applied at various scales to blend long-term societal and environmental values in a dynamic manner that may be modified through adaptive management.

## **Effects**

- **Direct** – results of an action occurring when and where the action takes place.
- **Indirect** – results of an action occurring at a location other than where the action takes place and/or later in time, but in the reasonably foreseeable future.
- **Cumulative** – results of collective past, present, and reasonably foreseeable future actions.

## **Emergent**

A plant rooted in shallow water with most of its vegetation above water (cattails).

## **Encumbrance**

A claim, lien, charge, or liability attached to and binding real property.

**Endangered Species**

Any species of animal or plant, which is in danger of extinction throughout all or a significant portion of its range. Plant or animal species identified and defined in accordance with the 1973 Endangered Species Act and published in the Federal Register.

**Environmental Impact Statement**

A document prepared by a federal agency in which anticipated environmental effects of a planned course of action or development are evaluated. A federal statute (Section 102 of the National Environmental Policy Act of 1969 (NEPA)) requires that such statements be prepared. It is prepared first in draft or review form, and then in a final form. An impact statement includes the following points:

- (1) The environmental impact of the proposed action,
- (2) Any adverse impacts which cannot be avoided by the action,
- (3) The alternative courses of actions,
- (4) The relationships between local short-term use of the human environment and the maintenance and enhancement of long-term productivity, and
- (5) A description of the irreversible and irretrievable commitment of resources, which would occur if the action were accomplished.

**Ephemeral Stream**

A stream or portion of a stream that flows only in direct response to rainfall and snowmelt but not during dry seasons. Its channel is at all times above the water table.

**Erosion**

The wearing away of the land surface by running water, wind, ice, gravity, or other geologic activity.

**Estuary**

An ecological system at the mouth of a stream where fresh and salt water mix and where salt marshes and intertidal mudflats are present. The landward extent of an estuary is the limit of salt-intolerant vegetation, and the seaward extent is a stream's delta at mean low water.

**Estuary Fringe Habitat**

A 1,000-foot zone around an estuary

**Even-Aged Management**

The application of a combination of actions that result in the creation of stands in which trees of essentially the same age grow together. Clearcutting is an example of this type of management.

**Even-aged System**

A planned sequence of treatments designed to maintain and regenerate a stand with one age class. The range of tree ages is usually less than 20 percent of the rotation.

**Existing Visual Condition (EVC)**

The level of visual quality or condition presently occurring on the ground. The six existing visual condition categories are:

- **Type I:** Areas that appear to be untouched by human activities.
- **Type II:** Areas in which changes in the landscape are not noticed by the average person unless pointed out.
- **Type III:** Areas in which changes in the landscape are noticed by the average person but they do not attract attention. The natural appearance of the landscape still remains dominant.
- **Type IV:** Areas in which changes in the landscape are easily noticed by the average person and may attract some attention. Although the change in landscape is noticeable, it may resemble a natural disturbance.

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- **Type V:** Areas in which changes in the landscape are obvious to the average person. These changes appear to be major disturbances.
- **Type VI:** Areas in which changes in the landscape are in glaring contrast to the natural landscape. The changes appear to be drastic disturbances.

## **Fen**

A tract of low, wet ground containing sedge peat that is relatively rich in mineral salts, alkaline in reaction, and characterized by slowly flowing water. Vegetation is generally sedges and greases, often with low shrubs and sometimes a sparse cover of trees. Sphagnum mosses are absent or of low cover. Unlike peatlands (commonly referred to as bogs or muskegs), fens contribute to stable stream flows, provide nutrient input to streams and often contribute to fish rearing habitat.

## **Fish Habitat**

The combined aquatic and surrounding terrestrial environments that afford the necessary physical and biological support systems required by fish species during various life stages.

## **Floodplain**

That portion of a river valley, adjacent to the river channel, which is covered with water when the river overflows its banks at flood stages in response to a 100-year storm event.

## **Fluvial Processes**

Processes driven by moving water, such as formation of floodplains, alluvial fans or deltas, and stream channel scour.

## **Forbs**

A grouping/category of herbaceous plants, which are not included in the grass, shrub, or tree groupings/categories; generally smaller flowering plants.

## **Foreground**

A term used in visual management to describe the stand of trees immediately adjacent to a scenic area, recreation facility or forest highway. The area is located less than 1/4 mile from the viewer. (See Background and Middleground.)

## **Forested Land**

Land at least 10 percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for non-forest use.

## **Forested Habitat**

All areas with tree cover. Used in this EIS to represent a general habitat zone.

## **Function**

A term in ecology referring to the interactions and influences between plant and animal species within an area (how each species uses its environment), and to natural processes of change or disturbance (such as aging or wind).

## **Geographic Information System (GIS)**

A system of computer maps with corresponding site-specific information that can be electronically combined to provide reports and maps to support the decision-making process.

## **Glacial Processes**

Processes related to moving ice or glaciers. These processes include the scraping away of soils and substrates, deposition of materials held in the ice (e.g., till or moraines), and formation of kettle lakes where ice chunks break off, are buried, and later melt.

## **Glacial Till Deposit**

Non-sorted, non-stratified sediment laid down by a glacier.

**Group User Day**

Two or more people engaged in a recreational activity for a day. “Day” is defined as a commercial business, cost per day.

**Group Selection**

A harvest method in which trees are removed in small groups at a time.

**Harvesting Method (Cutting Method)**

A method by which a stand is logged. Emphasis is on meeting logging requirements while concurrently attaining silvicultural objectives (see Regeneration Method).

**Habitat Capability**

The estimated maximum number of fish or wildlife that can be supported by the amount and distribution of suitable habitat in an area.

**Habitat Conservation Area**

See Old-growth Habitat Reserve.

**Healthy Ecosystem**

An ecosystem in which structure and functions allow the maintenance of biological diversity, biotic integrity, and ecological processes over time.

**Heritage Resources**

The physical remains of districts, sites, structures, buildings, networks, events, or objects used by humans in the past. They may be historic, prehistoric, architectural, or archival in nature. Heritage resources are non-renewable aspects of our national heritage.

**Hierarchy**

References the observation that ecosystems occur in a nested arrangement, with smaller ecosystems found within larger ones. The hierarchy shows the ecological factors as well as the plants, animals, and abiotic processes in a hierarchical relationship.

**Home Range (Community)**

The recreation places lying within 15–30 miles of communities. This is the typical distance one could travel in a day by small boat or on a limited community road system.

**Indirect Employment**

The jobs in service industries that are associated or support a given activity (e.g., equipment suppliers).

**Interdisciplinary Team (IDT)**

A group of individuals with different training assembled to solve a problem or perform a task. The team is assembled out of recognition that no single scientific discipline is sufficiently broad to adequately address the problem. Through interaction, participants bring different points of view and a broader range of expertise to bear on the problem.

**Irrecoverable Commitments**

Loss of production or use of renewable natural resources for a period of time. The production or loss is irretrievable, but not irreversible.

**Irreversible Commitments**

Decisions causing changes, which cannot be reversed. Often applies to nonrenewable resources such as minerals and cultural resources.

**Karst**

A type of topography that develops in areas underlain by soluble rocks, primarily limestone. Dissolution of the subsurface strata results in areas of well-developed surface drainage features such as sinkholes, dry valleys, vertical shafts, caves, and fluted rock surfaces (epikarst).

## **Karst Vulnerability Assessment**

A management tool used to assess the susceptibility or sensitivity of the karst resources to proposed activities. This approach recognizes that not all karst and associated resources are equal. Vulnerability mapping uses the fact that some parts of a karst landscape are more sensitive than others to planned land uses.

## **Knutsen-Vandenberg Act (KV)**

This Act was passed by Congress in 1930 and amended in 1976 to provide for funding reforestation, resource protection, and improvement projects in timber sale areas. It allows for collecting funds as a portion of the fee paid by the purchaser for projects such as fish and wildlife habitat improvement.

## **Land Use Designation (LUD)**

A defined area of land to which specific management direction is applied.

## **Land Use Prescriptions**

Specific management direction applied to a land use designation (LUD) to attain multiple use and other goals and objectives.

## **Landscape**

An area composed of interacting and interconnected patterns of habitats (ecosystems) that are repeated because of the geology, landform, soil, climate, biota, and human influence throughout the area. A landscape is composed of watersheds and smaller ecosystems.

## **Large Woody Debris (LWD)**

Any large piece of relatively stable woody material having a diameter of greater than 10 centimeters and a length greater than one meter that intrudes into the stream channel.

## **Layout**

Planning and mapping (using aerial photos) of harvest and road systems needed for timber harvest in a given area. Also can refer to the process of on-the-ground designation of roads and harvest units.

## **Log Transfer Facility (LTF)**

Includes the site and structures used for moving logs and timber products from land-based transportation forms to water-based transportation forms (or vice versa). LTF siting and construction are regulated by the 1987 Amendments to the Clean Water Act.

## **Logging Systems**

- **Helicopter Logging.** This system consists of slinging logs underneath large helicopters and flying them (normally downhill) to a landing. Helicopters are typically used only in situations where road access is precluded or to accomplish non-clearcut harvest objectives.
- **Shovel Logging.** The process of moving logs from the stump to the landing by repeated swinging with a track-mounted swing boom loader. Logs are decked progressively closer to the road with each pass of the loader until they are finally decked at the roadside. This system is best used on well-drained sites with side slopes of less than 20 percent.
- **Skyline Logging.** Several cable systems used in Alaska and the Pacific Northwest are collectively called skyline systems. Among the types included in this category are live skyline (including gravity systems), slackline and running skyline. These systems generally allow for yarding distances of over 1,000 feet and keep one end or the entire log suspended above the ground for most or all of the yarding distance.

## **Matrix**

The landscape element that plays the dominant role in landscape functioning. Also, a landscape element surrounding a patch.

**Maximum Disturbance Threshold (MDT)**

The amount of disturbance (such as timber harvest) allowed in any given area in order to meet the intent of the Visual Quality Objective (VQO) for that area.

- Maximum Disturbance Threshold (MDT) Retention: no more than 8% of the area may be in a disturbed condition at any one time.
- Partial Retention: no more than 16% of the area may be in a disturbed condition at any one time.
- Modification: no more than 25% of the area may be in a disturbed condition at any one time.
- Maximum Modification: no more than 35% of the area may be in a disturbed condition at any one time.

**Metamorphic rock**

Rock formed in response to changes in temperature and pressure that take place, in general, below the surface of the earth.

**Microclimate**

The temperature, moisture, wind, pressure, and evaporation (climate) of a very small area that differs from the general climate of the larger surrounding area.

**Middleground**

The visible terrain beyond the foreground where individual trees are still visible but do not stand out distinctly from the landscape. The area is located from 1/4 to 3-5 miles from the viewer. (See Foreground and Background.)

**Mitigation**

Measures to lessen or make minimal the severity of environmental impacts. Mitigation measures may include avoiding; minimizing by limiting the degree or magnitude of; repairing, rehabilitating, or restoring; reducing or eliminating; or compensating for an impact.

**Muskeg**

A wetland developed over thousands of years in depressions or flat areas on gentle to steep slopes. These bogs have poorly drained, acidic, organic soils that support vegetation that can be sphagnum moss; herbaceous plants; sedges, rushes, and forbs; or may be a combination of sphagnum moss and herbaceous plants. These vegetation types may have a few shrubs and stunted trees.

**National Environmental Policy Act (NEPA)**

Passed by Congress in 1969, this act requires the preparation of environmental impact statements for federal actions that may have a significant effect on the human environment.

**National Forest Management Act (NFMA)**

A law passed in 1976 that amends the Forest and Rangeland Renewable Resources Planning Act and requires the preparation of Forest Plans.

**Natural Variability**

Variability in landscape/ecosystem composition, structure, and function that has occurred through recent adaptive evolutionary time.

**Nonforest Land**

Land having less than ten percent tree cover. Land that has never supported forests and lands formerly forested but now developed for such nonforest uses as crops, improved pasture, etc.

**Non-productive Forest Land**

Forest land that does not produce or is incapable of producing more than twenty cubic feet per acre per year of industrial wood.

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## **Old-Growth Forest**

Ecosystems distinguished by old trees and related structural attributes. Old-growth includes the later stages of forest stand development that typically differ from earlier stages in a variety of characteristics. These characteristics may include larger tree size, higher accumulations of large dead woody material, multiple canopy layers, different species composition, and different ecosystem function. The structure and function of an old-growth ecosystem will be influenced by its stand size, landscape position, and context. Also defined as timber stands over 150 years in age with an average volume of at least 8,000 board feet per acre.

## **Old-growth Habitat Reserve (OGR)**

A contiguous unit of old-growth forest habitat managed to maintain the integrity of the old-growth forest ecosystem.

## **Old-growth Habitat Reserve Strategy**

A system of large, medium, and small habitat reserves that are part of a landscape conservation strategy used to address National Forest Management Act requirements to maintain habitat to support viable wildlife populations well distributed across the Tongass National Forest. Also known as Habitat Conservation Areas (HCAs).

- **Large Reserves:** A landscape of at least 20,000 acres of productive old growth forest, within a landscape of at least 40,000 acres. To address habitat quality, at least 50 percent (10,000 acres) of the old growth must be highly productive. To ensure interaction of species and dispersal between large reserves, they must be no more than 20 miles apart.
- **Medium Reserves:** A landscape of at least 5,000 acres of productive old growth of which at least 2,500 acres must be the highly productive component. Old growth must occur within a landscape of at least 10,000 acres. Medium reserves should be no less than 8 miles apart to facilitate dispersal and re-colonization.
- **Small Reserves:** Provide at least one 800 acres block of productive old-growth forest within an area of at least 1600 acres within each 10,000 acres landscape (e.g., 16 percent of each VCU).

## **Overstory**

In a stand with several vegetative layers, the overstory is the uppermost layer usually formed by the tallest trees.

## **Overstory Removal**

See Regeneration Methods.

## **Palustrine**

Nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.50 percent.

## **Patch**

Ecosystem elements (such as areas of vegetation) that are relatively homogeneous internally and that differ from what surrounds them.

## **Patch Clearcuts**

See Regeneration Methods.

## **Pattern**

The spatial arrangement of landscape elements (patches, corridors, matrix) that determines the function of a landscape as an ecological system.

## **Plant Association**

Climax forest plant community type representing the endpoint of succession.

**Plant Community**

An assemblage of plants that, in general, occur together on similar site conditions.

**Pole/Young Sawtimber Stage**

The stage following timber harvest, usually 26 to 150 years, when canopy closure decreases the amount of light that reaches the forest floor. This stage is associated with a rapid reduction in understory biomass.

**Potential Yield**

The maximum harvest that is possible given the optimum perpetual sustained-yield harvesting level attainable with intensive forestry on regulated areas and considering productivity of the land, conventional logging technology, standard silvicultural treatments, and relationships with other resource uses and the environment.

**Precommercial Thinning**

The practice of removing some of the trees of less than marketable size from a stand in order to achieve various management objectives.

**Productive Forest Land**

Forest land that produces or is capable of producing more than twenty cubic feet per acre per year of industrial wood.

**Productive Old-growth (POG)**

POG is forest land having a timber volume of greater than eight thousand board feet per acre and is categorized as volume strata low, medium, and high in the GIS database. POG generally provides important cover and forage habitat for wildlife as a result of the dense canopy, which reduces snow accumulations in the understory during the winter but is open enough to provide understory vegetation during the spring, summer, and fall.

**Recreation Opportunity Spectrum (ROS)**

A system for planning and managing recreation resources that categorizes recreation opportunities into seven classes. Each class is defined in terms of the degree to which it satisfies certain recreation experience needs based on the extent to which the natural environment has been modified, the type of facilities provided, the degree of outdoor skills needed to enjoy the area and the relative density of recreation use. The ROS classes are:

- **Primitive.** An unmodified environment generally greater than 5,000 acres in size and located generally at least 3 miles from all roads and other motorized travel routes. A very low interaction between users (generally less than 3 group encounters per day) results in a very high probability of experiencing solitude, freedom, closeness to nature, tranquility, self-reliance, challenge, and risk. Evidence of other users is low. Restrictions and controls are not evident after entering the land unit. Motorized use is rare.
- **Semi-Primitive Non-Motorized.** A natural or natural-appearing environment generally greater than 2,500 acres in size and generally located at least 1/2 mile but not further than 3 miles from all roads and other motorized travel routes. Concentration of users is low (generally less than 10 group encounters per day), but there is often evidence of other users. There is a high probability of experiencing solitude, freedom, closeness to nature, tranquility, self-reliance, challenge, and risk. There is a minimum of subtle on-site controls. No roads are present in the area.

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- **Semi-Primitive Motorized.** A natural or natural-appearing environment generally greater than 2,500 acres in size and located within 1/2 mile of primitive roads and other motorized travel routes used by motor vehicles; but not closer than 1/2 mile from better-than-primitive roads and other motorized travel routes. Concentration of users is low (generally less than 10 group encounters per day), but there is often evidence of other users. Moderate probability of experiencing solitude, closeness to nature, and tranquility, with a high degree of self-reliance, challenge and risk in using motorized equipment. Local roads may be present; along saltwater shorelines there may be extensive boat traffic.
- **Roaded Natural.** Resource modification and utilization are evident, in a predominantly natural-appearing environment generally occurring within 1/2 mile from better-than-primitive roads and other motorized travel routes. Interactions between users may be moderate to high (generally less than 20 group encounters per day), with evidence of other users prevalent. There is an opportunity to affiliate with other users in developed sites but with some chance for privacy. Self-reliance on outdoor skills is only of moderate importance with little opportunity for challenge and risk. Motorized use is allowed.
- **Roaded Modified.** Vegetative and landform alterations typically dominate the landscape. There is little on-site control of users except for gated roads. There is moderate evidence of other users on roads (generally less than 20 group encounters per day), and little evidence of others or interactions at campsites. There is opportunity to get away from others but with easy access. Some self-reliance is required in building campsites and use of motorized equipment. A feeling of independence and freedom exists with little challenge and risk. Recreation users will likely encounter timber management activities.
- **Rural.** The natural environment is substantially modified by land use activities. Opportunity to observe and affiliate with other users is important, as is convenience of facilities. There is little opportunity for challenge or risk, and self-reliance on outdoor skills is of little importance. Recreation facilities designed for group use are compatible. Users may have more than 20 group encounters per day.
- **Urban.** Urbanized environment with dominant structures, traffic lights, and paved streets. May have natural appearing backdrop. Recreation places may be city parks and large resorts. Opportunity to observe and affiliate with other users is very important, as is convenience of facilities and recreation opportunities. Interaction between large numbers of users is high. Outdoor skills, risk, and challenge are unimportant except for competitive sports. Intensive on-site controls are numerous.

## Recreation Place

An area that has natural characteristics that attract people. Examples of natural attractors are sandy beaches, anchorages, and freshwater. Recreation Places are represented on maps and in GIS as polygons. Each Recreation Place has recreation activities associated with it. Some examples of these activities are: viewing scenery/wildlife, boating, hiking, stream/saltwater/lake fishing, dispersed camping, and big game hunting.

## Recreation Site

A specific site and/or facility occurring within a Recreation Place (excluding anchorages which are not physically in a Recreation Place but are connected to the nearest one in the data base tables).

## Regeneration (Reproduction) Methods

A cutting method by which a new age class is created. Examples of regeneration methods include clearcut, small strip cut, clearcut with reserves, overstory removal, and individual tree selection. These are grouped into three categories: even-aged, two-aged, and uneven-aged.

**1. Even-aged methods** regenerate and maintain a stand with primarily one age class. For this project, it also includes stands that may have more than one age class but at least one harvested area within the stand will create a large enough opening in the canopy that it results in an exposed microsite for the subsequent regeneration. This is generally defined as one or two dominant tree heights.

- **Clearcut** – harvesting method in which all trees are cleared in one cut. It prepares the area for a new, even-aged stand. The area harvested may be a patch, stand, or strip large enough to be mapped or recorded as a separate age class.
- **Clearcut with reserves** – a clearcut in which varying numbers of reserve trees are not harvested to attain other resource goals. For this project, this method may result in either even-aged or two-aged stands depending on the size of the openings created. Even-aged stands result in openings at least 2 to 3 tree heights in diameter.

**2. Two-aged methods** regenerate and maintain stands with two age classes. The resulting stand may be two-aged or tend toward an uneven-aged stand. For this project, any harvested openings would be less than 2 to 3 tree heights in diameter to maintain a microsite with canopy cover.

- **Clearcut with reserves** (see above) – the resulting stands maintain a partially shaded microsite on an area no larger than 2 to 3 tree heights in diameter.
- **Small strip cuts** – this includes small strip cuts that are narrow linear clearcuts approximately 2 to 3 tree heights in width that run the full length from the road to the unit boundary. Areas between these cuts are not harvested and are about equal in size to the openings. These are designed to leave reserve areas within the unit but allow for the use of cable yarding.
- **Overstory removal** – the cutting of trees comprising an upper canopy layer in order to release trees or other vegetation in an understory. This often results in an even-aged stand but in this project the resulting stand will be two-aged.

**3. Uneven-aged (selection) methods** regenerate and maintain a multi-aged structure by removing some trees in all size classes either singly, in small groups, or in strips.

- **Single (individual) tree selection** – individual trees of all size classes are removed more or less uniformly throughout the stand to promote growth of remaining trees, provide space for regeneration, and achieve desired stand structure.

#### **Resident Fish**

Fish that reside in fresh water on a permanent basis. Resident fish include non-anadromous Dolly Varden char and cutthroat trout.

#### **Resilience**

The ability of an ecosystem to maintain diversity, integrity, and ecological processes following disturbance.

#### **Response Reach**

A sensitive section of a stream, which will reflect change in the upstream sediment budget.

#### **Restoration**

The long-term placement of land back into its natural condition or state of productivity.

#### **Riparian Area**

The area including a stream channel, lake or estuary bed, the water itself, and the plants that grow in the water and on the land next to the water.

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## **Riparian Management Area (RMA)**

Land areas delineated in the Forest Plan (1997 TLRMP) to provide for the management of riparian resources. Specific standards and guidelines, by stream process group, are associated with riparian management areas. Riparian management areas may be modified by watershed analysis.

## **Road Management Objective (RMO)**

Defines the intended purpose of an individual road based on management direction and access management objectives. Road Management Objectives contain design, operation, and maintenance criteria. These are further defined as road functional class, road status, and road service life.

### **Road Functional Class - Arterial**

A forest road that provides service to large land areas and usually connects with other arterial roads or public highways.

### **Road Functional Class - Collector**

A forest road that serves smaller land areas than an arterial road and usually connects forest arterial roads to forest local roads or terminal facilities. Collector roads are usually long-term facilities.

### **Road Functional Class - Local**

A forest road that connects terminal facilities with forest collector, forest arterial, or public highways. Usually forest local roads are single-purpose transportation facilities and can either be long or short term in nature.

### **Road Service Life - Long-term**

A road developed and operated to provide continuous access for long-term land management and resource utilization needs.

### **Road Service Life - Intermittent**

A road developed and operated for periodic service and closed for more than one year between periods of use.

### **Road Service Life - Short-Term**

A road developed and operated for a limited time period but which is likely to be extended during a future entry and which ceases to exist as a transportation facility after the purpose for which it was constructed is completed. Short-term roads are considered part of the Forest transportation network.

### **Road Status - Existing**

Roads and facilities that are already part of the forest transportation system.

### **Road Status - Specified**

Those forest development roads planned for future recurrent land management uses and for which the timber sale contract specifies the location, standards, and specifications.

These relate to transportation facilities and appurtenances shown on the Sale Area Map and listed in the Timber Sale Contract.

### **Road Status - Temporary**

Any short-lived road not intended to be a part of the forest development transportation system and not necessary for future resource management.

## **Roadless Inventory**

This is a list of areas, which meet the minimum criteria for potential inclusion in the National Wilderness System. Identifying this potential does not imply that areas should or should not be recommended for designation as Wilderness, but is intended to portray the remaining undeveloped portions of the National Forest for which Wilderness is a future option. To qualify, an area must contain at least 5,000 acres of undeveloped land that does not contain improved roads maintained for travel by passenger-type vehicles. However, areas less than 5,000 acres may qualify if they are a self-contained ecosystem such as an island, an area contiguous to existing Wilderness, or are ecologically isolated by topography, and manageable in a natural condition. This inventory was used for evaluating an area's capability

and availability for Wilderness recommendation. This type of planning is done at the forest level.

**Rotation**

The planned number of years between the formation and regeneration of a crop or stand of trees and its final cutting at a specified stage of maturity.

**Rotation Age**

The age of a stand when harvested at the end of a rotation.

**Second-Growth Forest**

Forest growth that has regenerated naturally or has been planted after some drastic interference (e.g., clearcut harvest, serious fire, or insect attack) with the previous forest growth.

**Sediment Source Area (SSA)**

Steep, highly dissected uplands that are primary source areas for sediment delivery to stream systems. Snow avalanching, mass wasting, V-notch sideslopes, and rill erosion are the dominant erosion processes.

**Seedling/Sapling Stage**

The stage following timber harvest when most colonizing tree and shrub seedlings become established (usually 1 to 25 years). Also referred to as the understory colonization stage.

**Silviculture**

Forest management practices that deal with the establishment, development, reproduction, and care of forest trees to meet certain objectives.

**Single Tree Selection**

See Regeneration Methods.

**Slash**

Debris left over after a logging operation, such as limbs, bark, and broken pieces of logs.

**Soluble Rock**

Rock that can be easily dissolved, such as limestone.

**Special Interest Areas**

Areas possessing unique or unusual scenic, historic, prehistoric, scientific, natural, or other characteristics. The objective of designating and managing such areas is to protect their unique values and, where appropriate, to foster public use and enjoyment of these areas. These areas may be designated as scenic, recreational, historical, archaeological, geological, botanical, zoological, or paleontological.

**Species of Concern**

Those species of plant or animal which are under consideration (by US Fish and Wildlife Service and National Marine Fisheries Service) for listing as threatened or endangered, but which are provided no statutory protection under the Endangered Species Act.

**Stand**

A contiguous group of trees sufficiently uniform in age class distribution, composition, and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable unit.

**Stand Structure**

The horizontal and vertical distribution of forest stand components, including the height, diameter, crown layers and stems of trees, shrubs, herbaceous understory, snags, and down woody debris.

**State Historic Preservation Officer (SHPO)**

State-appointed official who administers Federal and State programs for cultural resources.

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## Strata

See Volume strata.

## Stream Class

A means to categorize stream channels based on their fish production values. There are four stream classes on the Tongass National Forest:

- **Class I.** Streams and lakes with anadromous or adfluvial fish habitat; or high quality resident fish waters listed in Appendix 68.1, Region 10 Aquatic Habitat Management Handbook (FSH 2609.24), June 1986; or habitat above fish migration barriers known to be reasonable enhancement opportunities for anadromous fish.
- **Class II.** Streams and lakes with resident fish populations and generally steep (6-15 percent) gradient (can also include streams from 0-5 percent gradient), where no anadromous fish occur, and otherwise not meeting Class I criteria. These populations have limited fisheries values and generally occur upstream of migration barriers or have other habitat features that preclude anadromous fish use.
- **Class III.** Perennial and intermittent streams with no fish populations but which have sufficient flow or transport sufficient sediment and debris to have an immediate influence on downstream water quality or fish habitat capability. These streams generally have bank full widths greater than 5 feet and are highly incised into the surrounding hillslope.
- **Class IV.** Intermittent, ephemeral, and small perennial channels with insufficient flow or sediment transport capabilities to have an immediate influence on downstream water quality or fish habitat capability. These streams generally are shallowly incised into the surrounding hillslope.
- **Non-streams.** Rills and other watercourses, generally intermittent and less than one foot in bank full width, little or no incision into the surrounding hillslope, and with little or no evidence of scour.

## Sub-Basin

A small tributary watershed within a larger watershed.

## Subsistence Use

The customary and traditional use by rural Alaskan residents of wild renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of non edible byproducts of fish and wildlife resources taken for personal or family consumption; for barter or sharing; for personal or family consumption; and for customary trade.

## Successional Stage

One stage in a series of changes affecting the development of a biotic community. On its path to a climax stage, the community will pass through several stages of adaptation to environmental changes.

## Sustainability

The ability of an ecosystem to maintain ecological processes and functions, biological diversity, and productivity over time.

## Tentatively Suitable Forest Land

Forest land that produces or is capable of producing crops of industrial wood and

- (a) has not been withdrawn by Congress, the Secretary of Agriculture, or the Chief of the Forest Service;
- (b) existing technology and knowledge is available to ensure timber production without irreversible damage to soil productivity or watershed conditions;

- (c) existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that it is possible to restock adequately within 5 years after final harvest; and
- (d) adequate information is available to project responses to timber management activities.

**Thousand Board Feet (MBF)**

A method of timber measurement in which the unit is equivalent to 1,000 square feet of lumber one inch thick.

**Threatened Species**

A species of plant or animal, which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Threatened species are identified and defined in accordance with the 1973 Endangered Species Act and published in the Federal Register.

**Timber Appraisal**

Establishing the fair market value of timber by taking the selling value minus costs for manufacturing and transporting the logs from the stump to the manufacturer and including an allowance for profit and risk.

**Timber Entry**

A term used to refer to how far into the timber rotation an area is on the basis of acreage harvested. If an area is being managed for three entries over a 100-year rotation, the first entry would be completed when one-third (approximately 33 percent) of the available acreage is harvested (usually in 30-40 years). The second entry would be completed when two-thirds (approximately 66 percent) of the available acreage is harvested (usually 60-70 years). The third entry would be completed when all of the available acreage is harvested (at the end of the rotation).

**Timtyp**

A source of data contained in the Forest Service Geographic Information System (GIS) database. The forest is mapped into areas/stands/polygons based on vegetation composition, stocking, and productivity characteristics that comprise a GIS data layer referred to as Timtyp.

**Tongass Land and Resource Management Plan (1997 TLRMP)**

The ten-year land allocation plan for the Tongass National Forest that directs and coordinates planning and the daily uses and activities carried out within the Forest. See also Land Use Designation.

**Turbidity**

A measure of suspended sediments in water.

**Understory**

Anything growing in a stratum definitely below the main crown canopy in a forest.

**Understory-Colonization Stage**

The stage following timber harvest when most of the colonizing tree and shrub seedlings become established, usually 1 to 25 years.

**Uneven-Aged Management**

The application of a combination of actions needed to simultaneously maintain continuous high-forest cover, recurring regeneration of desirable species, and the orderly growth and development of trees through a range of diameter or age classes to provide a sustained yield of forest products. Group and individual tree selection are examples of this type of management.

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## **Uneven-aged System**

A planned sequence of treatments designed to maintain and regenerate a stand with three or more age classes.

## **Value Comparison Unit (VCU)**

First developed for the 1979 Tongass Land Management Plan as distinct geographic areas that generally encompass a drainage basin containing one or more large stream systems. Boundaries usually follow easily recognizable watershed divides. There are 926 units established to provide a common set of areas for which resource inventories could be conducted and resource value interpretations made.

## **Variety Class**

Visual classification that determines those landscapes which are most important and those that are of lesser value from a standpoint of scenic quality. The classification is based on the premise that all landscapes have some value, but those with the most variety or diversity have the greatest potential for high scenic quality:

- **Class A - Distinctive:** Refers to those areas where features of landform, vegetative patterns, water forms, and rock formations are of unusual or outstanding visual quality.
- **Class B - Common:** Refers to those areas where features contain variety in form, line, color, and texture or combinations thereof but which tend to be common throughout the character type and are not outstanding in visual quality.
- **Class C - Minimal:** Refers to those areas whose features have little change in form, line, color, or texture. Includes all areas not found under Classes A and B.

## **Visual Priority Routes and Use Areas (VPRs)**

Viewpoints from which scenery will be emphasized. Viewpoints are either “routes” or “use areas” and are the viewpoints used to assess the existing visual condition of any given project area and to develop project designs that will be consistent with the adopted visual quality objectives for each land use designation.

## **Visual Quality Objective (VQO)**

Measurable standards reflecting five different degrees of landscape alteration based upon a landscape’s diversity of natural features and the public’s concern for high scenic quality. The five categories of VQOs are:

- **Preservation:** Permits ecological changes only. Applies to Wilderness Areas and other special classified areas.
- **Retention:** Provides for management activities that are not visually evident; requires reduction of contrast through mitigation measures either during or immediately after operation.
- **Partial Retention:** Management activities remain visually subordinate to the natural landscape. Mitigation measures should be accomplished within one year of project completion.
- **Modification:** Management activities may visually dominate the characteristics of the landscape. However, activities must borrow from naturally established form, line, color, and texture so that its visual characteristics resemble natural occurrences within the surrounding area when viewed in the middleground distance.
- **Maximum Modification:** Management activities may dominate the landscape. Mitigation measures should be accomplished with five years of project completion.

**Visual Sensitivity Level**

Sensitivity Levels are the measure of people's concern for the scenic quality of the National Forests. Sensitivity Levels are determined for land areas viewed by those who are traveling through the forest on developed roads and trails using areas such as campgrounds and visitor centers or recreating at lakes, streams, and other water bodies. Three Sensitivity Levels are employed, each identifying a different level of user concern for the visual environment:

- **Level 1** - Includes all seen areas from primary travel routes, use areas, and water bodies where at least 3/4 of the forest visitors have a major concern for scenic qualities.
- **Level 2** - Includes all seen areas from primary travel routes, use areas, and water bodies where fewer than 1/4 of the forest visitors have a major concern for scenic qualities.
- **Level 3** - Includes all seen areas from secondary travel routes, use areas, and water bodies where less than 1/4 of the forest visitors have a major concern for scenic qualities.

**Volume**

Amount of wood in a stand of timber based on standing net board feet per acre by Scribner Rule.

**Volume Strata**

Divisions of old-growth timber volume derived from the interpreted timber type data layer (TIMTYP) and the common land unit data layer (CLU). Three volume strata (low, medium, and high) are recognized in the Forest Plan (1997 TLRMP) for each Administrative Area.

**V-notch**

A deeply incised valley along a waterway that would look like a "V" from a frontal view. These abrupt changes in terrain features are often used as harvest unit or yarding boundaries.

**Watershed**

The area that contributes water to a drainage or stream. Portion of the forest in which all surface water drains to a common point. Watersheds can range from tens of acres that drain a single small intermittent stream to many thousands of acres for a stream that drains hundreds of connected intermittent and perennial streams.

**Watershed Analysis**

A systematic procedure for characterizing and evaluating ecological processes within a watershed for use in ecosystem management and project planning. A procedure for assessing important geomorphic processes and functions and for describing key riparian, wetland, and aquatic habitat conditions and trends. Focuses interdisciplinary discussion on key watershed-level management issues and provides a basis for integrating project designs. (See Appendix J in the Forest Plan for watershed analysis from an aquatic perspective.)

**Wetlands**

Areas that are inundated by surface or ground water with a frequency sufficient, under normal circumstances, to support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include peatlands, muskegs, marshes, bogs, sloughs, potholes, river overflows, mud flats, wet meadows, seeps, and springs.

**Wild and Scenic Rivers Systems**

Determination of eligibility is the result of a process used for TLRMP that is described in the "Guidelines for Eligibility, Classification and Management of Wild and Scenic Rivers" (U.S. Department of Interior and U.S. Department of Agriculture, 1982). Eligibility and suitability of rivers for the Wild and Scenic Rivers System is determined at the forest planning level and is not within the scope of project-level planning.

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## **Wilderness**

Areas designated by congressional action under the 1964 Wilderness Act or subsequent Acts. Wilderness is defined as undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation. Wilderness Areas are protected and managed to preserve their natural conditions, which generally appear to have been affected primarily by the forces of nature, with the imprint of human activity substantially unnoticeable. They provide outstanding opportunities for solitude or for a primitive and confined type of recreation; include at least 5,000 acres or are of sufficient size to make practical their preservation, enjoyment, and use in an unimpaired condition; and may contain features of scientific, educational, scenic, or historic value as well as ecologic and geologic interest. On the Tongass National Forest, Wilderness has been designated by ANILCA and the Tongass Timber Reform Act (TTRA).

## **Wildlife Analysis Area (WAA)**

Alaska Department of Fish and Game administrative designation of an area that includes one or several Value Comparison Units (VCUs) for the purpose of wildlife analysis.

## **Wildlife Habitat**

The locality where a species may be found and where the essentials for its development and sustained existence are obtained.

## **Wind Processes**

Processes driven by prevailing or storm winds, such as wind snap of tree trunks, blowdown, and deformation of the typical tree crown shape to a flagged form, with most branches growing in the direction of the wind (e.g., krummholz trees at timberline).

## **Windthrow**

Areas where trees are uprooted, blown down, or broken off by storm winds.

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## List of Preparers

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B.S., Forestry, University of Montana, 1979

Forest Service: 20 years

Supervisory Forester, Tongass NF, Sitka RD (current)

Forester, Lewis and Clark NF, Judith RD (10 years)

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Other relevant experience:

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Certificate, Transportation Analysis, Oregon State University

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Forest Service: 32 years

Civil Engineer Technician/Transportation Planner, Tongass NF (21 years)

Civil Engineer Technician, Hiawatha NF (3 years)

Survey Technician, Allegheny NF (8 years)

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B.S., Forestry, Humboldt State University, 1980

Forest Engineering Institute, 1983

Silviculture Institute, 1987

Certified Silviculturist, Region 10, 1991 – present

Forest Service: 18 years

Ecologist, Tongass NF, Sitka RD (3 years)

Silviculturist, Tongass NF, Sitka RD (8 years)

Forester/ Recreation and Lands, Tongass NF, Sitka RD (2 years)

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B.S., Forest Resources, University of Washington, 1982

Silviculture Institute XIV, 1991-1992

Certified Silviculturist, Region 10, 1995-Present

Forest Service: 16 years

District Silviculturist, Tongass NF, Sitka RD (5 years)

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B.S., Park Administration, California State Polytechnic University, 1989

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Forest Service: 13 years

Support Services Specialist, PNW Research Station Wood Utilization Research and

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Writer-editor, Tongass National Forest (1 year)

Accounting Technician, Tongass National Forest (6 months)

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Forestry Technician, Gallatin NF, Hebgen Lake RD (1 season)

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Forest Service: 32 years

Planning Engineer, Tongass NF, Chatham Area and Sitka RD (12 years)

Forest Transportation Planner, Mendocino NF (9 years)

District Engineer, Lassen NF, Hat Creek RD (4 years)

South Zone Design Team Leader, Six Rivers NF (3 years)

Survey Party Chief, Shasta Trinity NF, Yolla Bolla RD (4 years)

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Natural Resource Mgt/Communications, Humboldt State University, 1972-1978

Forest Service: 8 years

Writer/Editor, Tongass NF

Aircraft Dispatcher, Tongass NF (4 years)

Personnel Assistant, Tongass NF (2 years)

District Clerk, Rogue River NF, Prospect RD, (2 years)

**Bradley Flynn, Recreation Planner**

B.S., Recreation, University of Idaho, 1977

A.S., Natural Resources Conservation, State University of New York, 1975

Forest Service: 15 years

Recreation Planner, Tongass NF (2 years)

Civil Engineering Technician, Tongass NF (2 years)

Civil Engineering Technician, Nez Perce NF (9 years)

Civil Engineering Technician, Horse Creek Research Project, Nez Perce NF and

Intermountain Research Station (2 years)

Forestry Technician Recreation, Nez Perce NF, Elk City RD (6 months)

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Doctoral Candidate, Sociology, Southern Illinois University-Carbondale, 2002

M.S., Forestry, Southern Illinois University-Carbondale, 1998

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Edwardsville, 1994

Forest Service: 1 year

Writer/Editor, Tongass NF, Sitka RD (1 year)

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## **Patrick Heuer, Forester/Silviculturist**

B.S. Forest Management, Colorado State University, Fort Collins CO, 1990  
Silviculture Certification US Forest Service 1997

Forest Service: 15 years

Forester/Silviculturist, Tongass National Forest (2 years)  
Forester/Silviculturist Shoshone National Forest (4 years)  
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B.S., Fisheries and Wildlife Management, University of Missouri, Columbia, 1990  
Graduate study, Fisheries, University of Alaska, 1992

Forest Service: 9 years

Fisheries Biologist, Tongass NF, Sitka RD (1 year)  
Biological Technician, Tongass NF, Sitka RD (8 years)

## **Gregory M. Killinger, Fisheries Biologist**

M.S., Fish and Wildlife Management, VPI, 1994  
B.S., Wildlife Biology, Oregon State University, 1983

Forest Service: 16 years

Fish, Wildlife, Watershed Staff Assistant, Tongass NF, Sitka RD (3 years)  
Fish Biologist, Tongass NF, Sitka RD (7 years)  
Biological Technician, Tongass NF, Sitka RD (3 years)  
Biological Technician, Forestry Sciences Laboratory, Juneau (6 months)  
Hydrological/Biological Technician, Tongass NF (1 year)  
Hydrological/Biological Volunteer, Tongass NF (1 year)

## **Jean Kleinert, Resource Clerk**

B.S., Office Management, Washington State University, 1972

Forest Service: 10 years

Office Automation Assistant, Tongass NF (4 years)  
Computer Clerk, Tongass NF (4 years)  
Office Clerk, Tongass NF (2 years)

## **Brett Light, Fisheries Technician**

B.S., Fisheries Resource Management, Sheldon Jackson College

Forest Service: 8 years

Biological Technician, Tongass NF, Sitka RD (8 years)

## **Bill Lorenz, Fisheries Biologist, Interdisciplinary Team Leader**

M.S., Fisheries Biology, University of Alaska – Fairbanks, 1984  
B.S., Wildlife Sciences, Utah State University, 1979

Forest Service: 20 years

Interdisciplinary Team Leader, Tongass NF (1 ½ years)  
Fisheries Program Manager, Tongass NF (2 ½ years)  
Fish, Wildlife, Watershed Staff Assistant, Sitka RD (8 years)  
Fisheries Biologist, Hoonah Ranger District (1 ½ years)  
Fisheries Biologist, Tongass NF (1 ½ years)  
Fisheries Biologist, Cordova Ranger District, Chugach NF (2 ½ years)  
Biological Technician, Cordova Ranger District, Chugach NF (2 ½ years)

Other relevant employment:

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B.A., Biology, Southwest State University, Marshall, Minnesota, 1982  
 Forest Service: 10 years  
   Computer Specialist, Tongass NF (4 years)  
   Computer Assistant, Tongass NF (3 years)  
   Computer Technician, Tongass NF (2 years)  
   Computer Clerk, Tongass NF (1 year)

**Rachel Myron, Archeologist**

B.A., Archeology, Colorado College, 1985  
 Graduate study, Cultural Resource Management, University of Nevada, Reno, 1995  
 Forest Service: 9 years  
   District Archeologist, Tongass NF, Sitka RD (4 years)  
   Archeologist, Tongass NF (2 years)  
   Archeological Technician, Tongass NF (3 years)  
 Other Relevant Experience:  
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**Mary Beth Nelson, Recreation Planner**

B.S., Recreation Area Management, Montana State University, 1979  
 Graduate study, Recreation Short-course, Utah State University, 1990  
 Graduate study, Leadership and Communications, University of Idaho, 1994  
 Forest Service: 14 years  
   Recreation Planner, Tongass NF (8 years)  
   Architectural Technician, Tongass NF (4 years)  
   Architectural Technician, Kootenai NF (2 years)

**Eric Onderkirk, Landscape Architect**

M.L.A., University of Michigan, 1989  
 M.U.P., University of Michigan, 1987  
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 Forest Service: 8 years  
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 Forest Service: 21 years  
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 B.S., Forest Recreation Resource Management, Oregon State University, 1989  
 Forest Service: 13 years  
   Economist, Alaska Region (4 years)  
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B.S., Civil Engineering, Marquette University, 1964  
Forest Service: 32 years  
Permit Coordinator, Tongass NF (5 years)  
Construction Engineer, Tongass NF (27 years)

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B.S., Wildlife Management, South Dakota State University, 1968  
M.S., Wildlife Biology, South Dakota State University, 1972  
Command and general Staff College, Ft. Leavenworth, KS, 1990

Forest Service: 14 years

Forest Wildlife Biologist, Tongass NF (9 years)  
Forest Wildlife Biologist, Pike and San Isabel NF (2 years)  
Forest Wildlife Biologist, Black Hills NF (3 years)

Other Relevant Employment:

Asst. Regional Supervisor, Game Management, South Dakota Game, Fish and Parks (12 years)  
Conservation Officer, South Dakota Game, Fish and Parks (2 years)  
Instructor, State University of New York (2 years)

## **Michael E. Shephard, Ecologist**

M.S., Botany (Field Naturalist Program), University of Vermont, Burlington, 1990  
B.A., Geology, Whitman College, Walla Walla, Washington, 1986

Forest Service: 4 years

Ecologist, Tongass NF (4 years)

Other Relevant Employment:

Vegetation Ecologist, Alaska Natural Heritage Program, University of Alaska, Anchorage (3 years)

## **Linn Shipley, Wildlife Biologist, Subsistence**

Wildlife Society Certified Wildlife Biologist, 1989  
B.A., Biology, Fresno State University, 1976  
B.A., English Literature, Fresno State University, 1973  
A.A., Liberal Arts, Allan Hancock Junior College, 1971

Forest Service: 20 years

Forest Wildlife Biologist, Tongass NF (1 year)  
Interdisciplinary Team Leader, Tongass NF (3 years)  
Acting Ketchikan District Ranger, Tongass NF (8 months)  
Deputy District Ranger, Tongass NF (2 years)  
Resource Officer, Tongass NF (4 years)  
Wildlife Biologist, Shasta-Trinity NF (7 years)  
Range Technician, Los Padres NF (2 years)

Other Relevant Employment:

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M.S., Forestry and Resource Management, Colorado State University, 1995  
B.S., Biology, Amherst College, 1985

Forest Service:

Resource Information Specialist, Tongass NF (3 ½ years)

## Janine (JT) Stangl, Wildlife Biologist

M.S., Biology, Montana State University, Bozeman, MT, 1994

B.S., Wildlife and Fisheries Management, New Mexico State University, Las Cruces, NM, 1987

Forest Service: 14 years

Wildlife Biologist, Tongass NF (2 years)

Interdisciplinary Specialist, Gallatin NF (1 year)

Wildlife Biologist, Gallatin NF (5 years)

Biological Technician, Gallatin NF (6 years)

## Terry Suminski, Fisheries Biologist, Wildlife Biologist

B.S., Fisheries and Wildlife Management, Michigan State University, 1988

Forest Service: 14 years

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Biological Sciences Technician, Tongass NF, Sitka RD (9 years)

Wildlife Biologist, Tongass NF, Sitka RD Planning Team (4 months)

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## James Thomas, Planning Group Leader

B.A., Ecology, University of Colorado, 1974

Graduate study, Forestry/Planning, Colorado State University, 1981

Graduate study, Geology, Western State College, Colorado, 1979

Forest Service: 17 years

Interdisciplinary Team Leader, Tongass NF, Sitka RD (1 year)

Assistant Interdisciplinary Team Leader, Tongass NF (3 years)

Forester, Planning Team, Tongass NF, Sitka RD (2 years)

Information Systems Group Leader, Tongass NF (3 years)

Information Systems Group Leader, Arapaho and Roosevelt NF (2 years)

Operations Research Analyst, Shawnee NF (2 years)

Natural Resource Planner, White River NF (1 year)

Forestry Technician, Arapaho and Roosevelt NF, Clear Creek RD (2 seasons)

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Wilderness Planner, White River NF, Holy Cross RD (1 year)

## Sue Trull, Forest Ecologist

M.A., Plant Ecology, University of Montana, 1988

B.A., Biology, Carleton College, 1982

Forest Service: 6 years

Forest Ecologist, Tongass NF (5 years)

Biological Technician, Tongass NF (2 seasons)

Other relevant employment:

Ecologist, Horsely Witten Hegemann, Inc. (3 years)

## Jake Winn, Soil Scientist/Ecologist

M.S., Wildland Resource Science, University of California, Berkeley, 1990

B.S., Agrarian Studies, University of California, Davis, 1987

Forest Service: 10 years

Soil Scientist/Ecologist, Tongass NF, Sitka RD (7 years)

Soil Scientist, Stanislaus NF, Mi-Wok RD (2 years)

Forestry Technician, Chugach NF, Cordova RD (½ year)

Soil Scientist, Plumas NF (½ year)

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## Other Assistance

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B.S., Forest Management, University of California, Berkeley, 1990  
Silviculture Institute XVII, 1994-1995  
Certified Silviculturist, Region 10, 1996-Present  
Forest Service: 10 years  
Forester/Silviculturist, Tongass NF, Sitka RD (4 years)  
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Brian Beall, Forestry Technician  
Stewart Bentley, Biological Technician  
Brian Crider, Road Locator  
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William R. Dougan, Silviculturist  
Eric Dow, Forestry Technician  
Richard Enriquez, Biologist, USFWS  
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Other Forest Service employees contributed to the completion of this document through their assistance in support functions and related land management planning projects (Southeast Chichagof EIS and others). Their help is acknowledged and appreciated.

## Distribution List

This section lists the agencies, organizations, and persons to whom a copy of this Environmental Impact Statement was sent.

### Agencies

Alaska Board of Fisheries  
Alaska Board of Game  
Alaska Department of Commerce and Economic Development, Office of the Commissioner  
Alaska Department of Environmental Conservation, Division of Environmental Quality  
Alaska Department of Environmental Conservation, Southeast Regional Office  
Alaska Department of Environmental Conservation, Sitka District Office  
Alaska Department of Fish and Game, Division of Habitat  
Alaska Department of Fish and Game, Division of Subsistence  
Alaska Department of Fish and Game, Division of Wildlife Conservation  
Alaska Department of Fish and Game, Division of Sport Fish  
Alaska Department of Natural Resources, Office of Project Management and Permitting  
Alaska Department of Natural Resources, Office of the Commissioner  
Alaska Department of Transportation and PF  
Alaska Fish and Game Advisory Committee  
Alaska Office of Management and Budget, Division of Governmental Coordination  
Alaska Office of the Governor, Division of Governmental Coordination  
Federal Energy Regulatory Commission, Advisor on Environmental Quality  
US Advisory Council on Historic Preservation  
US Army Corps of Engineers, Headquarters  
US Army Corps of Engineers, Jordan Creek Center  
US Army Corps of Engineers, Pacific Ocean Division  
US Army Corps of Engineers, Regulatory Branch  
US Department of Energy, Office of Environmental Compliance  
US Fish and Wildlife Service, Field Supervisor  
US Fish and Wildlife Service, Fisheries Division  
US Fish and Wildlife Service, Refuge Planning  
US Naval Observatory, Naval Oceanography Division  
US Navy, Office of Chief of Navy Operations  
US Coast Guard, Environmental Impact Branch  
US Coast Guard, WAMS Officer  
USDA APHIS PPD/EAD, Deputy Director  
USDA, Forest Service, Admiralty National Monument  
USDA, Forest Service, Alaska Region  
USDA, Forest Service, Chugach National Forest  
USDA, Forest Service, Craig Ranger District  
USDA, Forest Service, Ecosystem Management Coordination  
USDA, Forest Service, Forestry Sciences Laboratory  
USDA, Forest Service, Hoonah Ranger District  
USDA, Forest Service, Juneau Ranger District  
USDA, Forest Service, Ketchikan/Misty Ranger District  
USDA, Forest Service, Ketchikan Supervisor's Office  
USDA, Forest Service, Petersburg Ranger District  
USDA, Forest Service, Petersburg Supervisor's Office  
USDA, Forest Service, Sitka Ranger District  
USDA, Forest Service, Sitka Supervisor's Office

# 4 Lists

USDA, Forest Service, Thorne Bay Ranger District  
USDA, Forest Service, Petersburg Ranger District  
USDA, Forest Service, Wrangell Ranger District  
USDA National Agricultural Library  
USDA Natural Resources Conservation Service  
USDA Office of Civil Rights  
USDA OPA Publications Stockroom  
USDOC, National Marine Fisheries Service  
USDOI, Bureau of Land Management, BLM Alaska State Office  
USDOI, National Park Service, Alaska Region  
USDOI, Office of Environmental Policy and Compliance  
USDOI, Office of the Secretary (Washington D.C.)  
USDOI, Office of the Secretary (Anchorage, AK)  
USDOI, Regional Environmental Officer  
USDOT, Assistant Secretary for Policy  
USDOT, Federal Aviation Administration  
USDOT, Federal Highway Administration  
USDOT, Federal Railroad Administration  
USEPA, Alaska Operations Office  
USEPA, EIS Filing Section  
USEPA, EIS Review Coordinator  
USEPA, Office of Environmental Review

## Organizations and Businesses

Alaska Forest Association  
Alaska Native Brotherhood  
Alaska Native Sisterhood  
Alaska Rain Forest Campaign  
Alaska Travel Adventures  
Alaska Travel Industry Association  
Bonnie's Custom Logging  
Cascadia Wildlands Project  
Chichagof Conservation Council  
Concerned Alaskans for Resources and Environment  
Earthjustice  
Forest Conservation Council  
Forest Guardians  
Forest Service Employees for Environmental Ethics  
Friends of Glacier Bay  
Natural Resources Defense Council  
Northwestern University, Center for Urban Affairs and Policy Resources  
Sealaska Corporation  
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Shaffer and Harrington  
Sheldon Jackson College, Stratton Library  
Silver Bay Logging  
Silver King Marine  
Sitka Conservation Society  
Sitkans for a Sound Economy  
Southeast Alaska Conservation Council  
Tenakee Hot Springs Lodge

**Public  
Officials, City  
Offices, and  
Federally  
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Tribes**

Alaska State Library, Government Publications  
 Alaska State Senator, Robin Taylor  
 Angoon Community Association  
 Angoon Public School Library  
 City and Borough of Sitka, ACMP Coordinator  
 City and Borough of Sitka, City Planner  
 City and Borough of Sitka, Mayor  
 City of Tenakee Springs, Mayor  
 City of Wrangell  
 Craig Public Library  
 Douglas Public Library  
 Elfin Cove Public Library  
 Haines Public Library  
 Hollis Public Library  
 Hyder Public Library  
 Juneau Chamber of Commerce  
 Juneau Public Library  
 Kake Community Library  
 Kasaan Community Library  
 Ketchikan Gateway Borough, Office of the Borough Manager  
 Ketchikan Public Library  
 Kettleson Memorial Library  
 Mendenhall Valley Public Library  
 Pelican Public Library  
 Petersburg Public Library  
 Sitka Chamber of Commerce  
 Sitka Tlingit and Haida Community Council  
 Sitka Tribe of Alaska  
 Skagway Public Library  
 Southeast Alaska Regional Advisory Council  
 Tenakee Springs Public Library  
 Thorne Bay Community Library  
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 United States Senator, Lisa Murkowski  
 United States Senator, Richard J. Durbin  
 United States Senator, Ted Stevens  
 Wrangell Public Library

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